App. F. IX-4

*Previous References*

1934 .5
( C-V )

PRESERVED

File No. L 3-34
Serial Nos. 3, 4, 7

*Letter References.*

# GENERAL AND REVENUE SECRETARIAT.

*Serial Nos.* three

**Part B for** March 35

**SUBJECT.**

Administration Report of the Imperial Institute for 1933-4 together with the Review of Government Research.

D 5911-13 dt 5.3.35

WD 03607—GPB—22,500—2-8-35

i) Dir of Agri
ii) Comptroller
to govt
iii) Senior surgeon

Records with certain observations

12 tr

2678/1

General and Revenue Secretariat | C.N File No. 43 of 1934. | [App. F. III—2

Serial No.

3

From the Dir. of Agriculture
No Per 50-4C 32 of 34-35 dated 2/12/34
Forwarding, in triplicate, the Administration Report of the Mysore Sericulture for the year 1933-34.
To the Administration Report Section
W.C. for taking a copy of each of the report and summary & returning the file.

KP 4/12/34

4/12/34

KP 4.12.34

File returned to the Dev. Branch.

Sd/- 21.

Submit with a draft for approval

Sd/- KP 4/12/34

Issue & re-submit with a draft review

Sd/- 24/12/34

Submit with a draft review for approval

Sd/- KP 24/12/34

Typed draft

Sd/- 28/1

22 DEC. 1934 GENL. & R. SECTT.

4993/1934

Submit with a typed draft as decided

Sd/- 24/1/35

Clean draft

Sd/- 24/1

A typed draft is put up as decided

Sd/- 14/2

Draft review for approval

Sd/- 15/2

4/2

NOTE—Coptn. Sheet.

Submit with comparative statement furnished by the Sericulture Dept.

Sd/- 11/2

WD 01055 GPB 22,500 12.6.34

26.1.N

File No. of 193 . | General and Revenue Secretariat

Draft reports may be affd

Dewan 26.2. 27/2.

No 26-2-35

Issue 27/2.

To The Ch. of Adm:
The Controller
The Senior Surgeon:
No D 5-94-B. d 5/3/35
Review the administration Report
Subd with a D.S.N. for signature
D.S.N. fr appt.
Dy Sec 5/3.
Dewan 6-3. 7/3.

No 9-3-35

5344 6/B

22 FEB. 1935 GNL & REV. SECTT.

Please put up Typed DSN LO 7/3
Subd with a copy of D.S.N.

GNL & REV. SECT

1935

5792

7

*Submitted to His Highness.*

I submit herewith, for His Highness's gracious perusal the Administration Report of the Mysore Serum Institute for the year 1933-34 with the Government review thereon.

Bangalore,
9th March 1935.

Mirza M. Ismail
D E W A N.

General and Revenue
Secretariat

SUBJECT:-

Administration report of the Serum Institute for the year 1933-34 and Government review thereon.

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(*)

31. All urgent or confidential files returned with His Highness' orders may in the absence of instructions or indications to the contrary, be ordinarily circulated to the Members of Council for perusal after the issue of orders.

33. The Secretaries concerned should see that orders in the cases referred to above are issued at once and that the files are returned immediately after to the Chief Secretary for circulation to the Members.

34. In all other cases, the files will first be circulated to the Members of Council at Head-quarters and then sent to the Secretariat concerned for the issue of orders.

Circulated to Members of Council for perusal of His Highness' orders ~~before/after issue of orders~~. (*Vide Rules* 31, 33 and 34 of the Subsidiary Rules for the conduct of business of Council in the Manual of Council Rules and Procedure.)

*Chief Secretary to Government.*

Through the Secretary to Government,

Development Department.

6605-
14/3

FIRST MEMBER OF COUNCIL.

SECOND MEMBER OF COUNCIL.

Secy. Secn.

NOTE.—Contn. sheet.

TEL. ADDRESS:—"AGRI., BANGALORE."

Code: 5th Edition A.B.C.

In reply please quote in full the Nos. and indicative symbol given below.

# DEPARTMENT OF AGRICULTURE.

MYSORE STATE.

GEN. SEC. 2675 DEVELOPMENT BRANCH

BANGALORE,

Dated 2nd December 1934.

No. Per. 50-Hc. 321. of 34-35.

FROM

A. K. YEGNA NARAYANA IYER, ESQ., M.A. (MAD.),
DIPL. IN AGRI. (CANTAB.), N.D.D. (ENG.),
DIRECTOR OF AGRICULTURE IN MYSORE,
BANGALORE.

To

M. Venkatanaranappa, Esq., B.A.,
Secretary to the Government of Mysore,
Development Department, Bangalore.

SIR,

I have the honour to forward herewith, in triplicate, the Administration Report of the Mysore Serum Institute for the year 1933-34.

2. The popularity of the products outside the State has continued and among the Provinces who indented for our products were Hyderabad, Baroda, Coorg, Cochin and Pudukotta. The value of the products supplied to these together with that of the supplies made to our own Civil Veterinary Department in the year amounted to Rs.1,27,299/-.

3. One of the chief features of the year is the reduction in the indents from our own State for Rinderpest Serum, which is largely due to the systematic campaign against the disease carried out during the last several years.

The method of inoculation with "Goat Virus" which was tentatively being adopted on a small scale was approved for general application and this virus was supplied in the year to a much larger extent, Viz., 4,690 cc. as against 400 c.c. supplied last year. The method has great possibilities, and is sure to result in considerably cheapening inoculation against Rinderpest.

4. The Institute undertook the preparation of a new product Viz., Fowl Cholera Vaccine, which may be expected to reduce losses

due to this disease which is at present a serious handicap to the Poultry Industry.

5. Considerable Scientific work was also carried out and four papers were published by the different members of th Staff.

6. The year's work has maintained the steady progress being made in all directions.

I would express my appreciation of the energy and keenness of the Superintendent and his Staff in their wo

I have the honour to be,
Sir,
Your most obedient servant,

Director of Agriculture.

mrn

A SUMMARY OF THE ANNUAL REPORT OF THE MYSORE SERUM INSTITUTE, FOR THE YEAR 1933-34.

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PART I

INTRODUCTION:- During the year under report the Institute continued to prepare as usual most of the biological products required for use in the State, such as, Anti Rinderpest Serum, Bovine and Goat Rinderpest ~~Rinderpest~~ Virus, Anti Haemorrhagic Septicaemia Serum and Haemorrhagic Septicaemia Vaccine, Anti Black quarter Serum, Black quarter filtrate and Bacterin, Anti Anthrax Serum, and Sheep-pox Vaccine; and it was also able to comply promptly and fully with all the indents for the products received not only from the Mysore Civil Veterinary Department but also from other States such as, Hyderabad, Baroda, Coorg, Pudukkottai, Cochin, Ichalkaranji, Sangli, and Kolhapur.

In this connection it may however be said that the products prepared in this Institute are becoming more and more popular in as much as, ~~ever~~ of late (viz. since 1932-33) large and repeated indents are being received regularly from outside the State also for the supply of almost all the important products prepared here, while in the previous years, indents were being received from them only for Rinderpest Virus and Rinderpest Serum.

It is indeed very satisfactory to note that the total quantity of the various products other than rinderpest serum and virus supplied during the year to Hyderabad State alone is 93,500 doses as against 35,000 doses in the previous year.

The Government were pleased to direct in their Order No. 1116-17/C.V. 94-32-4 dated 4th September 1933, that due credit in accounts should be given to this Institute even for the supplies made to the Civil Veterinary

Department from July 1933 to avoid underestimation of the Revenue of the Institute, and the expenditure of the Civil Veterinary Department.

The Government were also pleased to sanction in their Government order No. D. 4245-6/C.V. 45-33-2 dated 27-2-34, the proposal to add the post of the Bacteriological Assistant as well as the six posts of the Veterinary Inspectors of the Institute to the cadres of the Assistant Superintendent and Veterinary Inspectors of the Civil Veterinary Department, respectively, with a view to afford scope for the incumbents to have their cases considered for promotion in higher grades with reference to their seniority and merit in the department.

An important feature during the year is the introduction of "Goat Virus alone inoculation" against Rinderpest in the field on an extensive scale. The Government have also approved, in their order No. 4835-6/C.V. 59-33-2 dated 9-4-1934, of the use of "Goat Virus alone" as an experimental measure, in view of the fact that the cost of protection against rinderpest would be very much reduced by adopting this method.

Another important feature during the year under report is the preparation of some new products such as Fowl Cholera Vaccine and Fowl Pox Vaccine besides some valuable experiments in connection with the preparation of some more fresh products such as, Black quarter vaccine Anthrax spore vaccine, Fowl cholera serum etc., as detailed in a separate para.

ADMINISTRATION:- Mr. S.D. Achar was in charge of the Institute and Mr. P.U. Nayar continued to be the Bacteriological Assistant throughout the year under report

BUILDINGS:- The Government were also pleased to sanction in their Order No. D. 6126-30 C.V. 54-33-3

dated 28-6-34 the construction of a new Reserve Depot at an estimated cost of Rs. 7,700/- as the old Rifle Range Buildings which are now being used as Reserve Depot are in a very dilapidated condition and also as these buildings are to be handed over to the Military Department. The new building is therefore proposed to be located in the Forest Plantation area at Hebbal.

As the present cattle sheds having thatched roofings are required to be repaired very frequently and as they had even collapsed completely on account of the heavy winds during May 1934, permanent roofing of the sheds will have to be arranged for, almost immediately.

Construction of residential quarters at least to some of the officers of the Institute is an urgent necessity, in order to facilitate better management.

LIBRARY:- The Library contains 227 volumes on Veterinary and other scientific subjects.

THE PRODUCTION & SUPPLY OF BIOLOGICAL PRODUCTS:

~~[illegible]~~ Under each product prepared at the Institute, the quantity supplied to the Mysore Civil Veterinary Department during the year under report, is less than that supplied in the previous year, and particularly under Black quarter serum, Rinderpest serum, and Rinderpest virus, it is very marked. The decrease is accounted for mainly by the reduction in the number of outbreaks especially of Rinderpest during the year under report and partly due to the Civil Veterinary Department having exercised greater control on their indents and economy in the use of these products.

In respect of supplies made to outside the State, it is very gratifying to note that except under Rinderpest Serum the quantities of the products supplied to Hyderabad during the year under report are very much more than those that supplied in the previous year, and it is over ten times more in the case of Haemorrhagic Septicaemia Vaccine and over four times more in the case of Black quarter filtrate. It may also be mentioned that indents were received during the year from some new States as well such as, Kolhapur, Pudukkottai, and Sangli, while indents for larger quantities were received from Baroda. It is thus seen that on the whole the indents received from and the supplies made to places outside the State during the year under report are much more satisfactory than in the previous year.

When the total issues of the products to places within as well as outside the State are considered, it is observed that while there is a fall under Rinderpest serum, Black quarter serum, and Rinderpest virus, there is a corresponding rise in Haemorrhagic Septicaemia Serum, Anthrax Serum, Haemorrhagic Septicaemia Vaccine and Black quarter Filtrate and Sheep-pox Vaccine.

## EXPERIMENTS & RESEARCH.

GOAT ADAPTED RINDERPEST VIRUS:- Anti Rinderpest serum that was prepared last year by immunising buffaloes with goat adapted virus was tested during the year and proved to contain less antibody content as compared with serum prepared by immunising the animals with bovine virus and serum.

As a result of the tests conducted with goat virus it is considered safe to inoculate a second dose of goat virus on the 7th day after the primary inoculation

with goat virus, by which time the reaction, if any, to the first dose will have been gauged.

Experiments to find viability of virus at different temperatures were continued this year also and it has been found that the Virus does not lose its antigenic value when kept for 15 days in cold storage and for 9 days at room temperature, while it becomes inactive when it is kept in the cold storage for over 15 days and at room temp rature for over 9 days.

Experiments with "Goat Virus alone" inoculation against Rinderpest on sheep and buffaloes, were tried and the conclusion arrived at is that a small quantity of Anti serum is essential to protect them against the disease.

Experiments to fix the smallest possible dose of virus required to immunise an animal are also in progress. In order to determine the duration of immunity conferred by immunising cattle with goat virus alone against rinderpest the third batch of animals of the amrit mahal herd No. 3 which had been placed at the disposal of the Institute for the purpose by the Live Stock Expert in Mysore, since 1932-33 were tested with virulent bovine virus, on 23rd October 1933 after a period of over 8 months after Goat Virus inoculation with perfectly satisfactory results proving so far that the immunity conferred by Goat Virus lasts for over 8 months. The other batches will be taken up later on for studying the further duration of the immunity.

TISSUE VACCINE AGAINST RINDERPEST:-

This product prepared from the spleen extirpated from

a goat affected with rinderpest at the height of reaction, was tried with favourable results.

SHEEP POX VACCINE:- As a result of the experiments conducted it has been found that the sheep-pox virus preserved in a cold storage for a period of 7 months keeps still virulent.

FOWL POX VACCINE:- This is another new product which has been taken up this year. Attempts are being made to pass the fowl pox virus through the bodies of pigeons to prepare the vaccine for use on fowls to protect them against fowl-pox.

BLACK QUARTER:- In addition to Black quarter filtrate and Black quarter serum that are now being supplied largely, attempts are being made to prepare Black quarter Bacterin on a larger scale than hitherto for supply also as it is known to have a higher antigenic value. The periodical prophylactic measures against black quarter at Cattle Breeding Station, Ajjanpur, were continued this year also, and the results were found very satisfactory.

HAEMORRHAGIC SEPTICAEMIA VACCINE:- A polyvalent vaccine was prepared by incorporating the local strains and the strains received from other laboratories outside Mysore.

ANTHRAX:- In addition to the production of Anti Anthrax Serum, the preparation of Live Spore Vaccine has been taken up and the experiments in this connection are in progress.

FOWL CHOLERA VACCINE:- This is a new product that was taken up for preparation during the year under report, with satisfactory and encouraging results.

It was tried on the field by a few Veterinary Inspectors of the State and was reported to be successful in controlling the outbreaks of fowl cholera, which is a common and important disease of fowls.

PROTOZOOLOGY:- It may be of interest to note that as a result of the examination of some thousands of blood smears of local buffaloes during the past six years it is seen that although over 40% of them harbour Theileria mutans without undergoing any systemic disturbance, they are as a class free from Babesia bigemina, which is rather common in local cattle.

Babesia motasi, Wenyon (1926) was encountered and recorded perhaps for the first time in India, in some sheep under goat virus experiments in this Institute This formed the subject of a paper by Mr. S.D. Achar, & Mr. G.N. Srikantiah, published in the Indian Veterinary Journal, Volume X No.4.

HELMINTHOLOGICAL NOTES:- During the course of the post mortem examination of the animals that died in the Institute, the collection of parasites was continued with a view to make a rough study of the probable incidence of parasitic infection of domesticated animals in the Statq. Out of the parasites collected, 14 nematodes, 4 Trematodes, and 11 Cestodes, were classified.

REVENUE & EXPENDITURE:- The total value of the products sold to places outside the State as well as to the Civil Veterinary Department in Mysore, and also of done animals and manure, sold within the State amounted to Rs. 1,27,209/- during the year under report, as against Rs. 1,77,706/- during 1932-33, the revenue realised from outside the State alone being Rs. 49,646/- as against

Rs. 58,751/- in the previous year. The decrease in the total revenue as compared with that of the previous year, is chiefly due to the considerable reduction in the prices of the products, (viz. by about one third) given effect to from 1-4-1933, as per Government Order No.D. 5256-7/ C.V. 74-32-2 dated 21-4-1933 in accordance with the reductions effected by the Imperial Institute of Veterinary Research, Muktesar, and partly due to the Civil Veterinary Department having exercised greater control on their indents and economy in the use of these products and also on account of the reduction in the number of outbreaks of ~~the~~ Rinderpest in the State during the year. However, it is gratifying to state that in spite of the above factors, it has been possible to maintain a fairly high percentage of profits.

Out of Rs. 1,00,300/- sanctioned by Government for expenditure during 1933-34, only a sum of Rs.83,40 was spent (saving Rs. 16,893) in the budget grant as against Rs. 92,173/- expended last year out of the budget grant of 1,03,700/- This appreciable reduction in expenditure is due to exercising great scrutiny and economy in every respect and also due to general fall in rates of the animals, fodder and other articles purchased during the year.

Thus it is seen that the work of the Institute from the financial point of view is on the whole very satisfactory.

GENERAL:- As desired by the Director of Agriculture in Mysore, the Sixth Annual Conference of the Mysore Veterinary Medical Association was held in this Institute in the month of May 1934. On that occasion some interesting demonstrations were arranged for and all the members were shown round all the sections

of the Institute.

During the year under report one Veterinary Inspector of this Institute underwent post graduate course in the Imperial Institute of Veterinary research, Muktesar, while four Veterinary graduates from different parts underwent the Short Course Training in this Institute.

It may be mentioned here that the Institute has become a place of much scientific as well as of general interest and that it was visited during the year by a number of distinguished visitors. The following were some of the visitors:-

1. ~~Sir~~ Maharaja Sir Kishan Prasad, Prime Minister of Hyderabad.
2. Amin-ul-mulk Sir Mirza Muhammad Ismail, K.C.I.E., O.B.E. The Dewan of Mysore.
3. Rajamantrapravina Mr. S.P. Rajagopalachari, Second Member in Council.
4. The Private Secretary to H.E.H. the Nizam of Hyderabad.
5. Mr. Hung Chun Chung, M.A. Rockfeller Foundation, Fellow for China University, Peiking, China.

Superintendent,
Serum Institute.

A.N. 13/11

ANNUAL REPORT OF THE MYSORE SERUM INSTITUTE, HEBBAL, BANGALORE, FOR THE YEAR 1933-34.

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1. INTRODUCTION:- The main activity of the Serum Institute during the year 1933-34 was as usual the preparation of several kinds of Sera and Vaccines on a large scale, so as to meet not only the requirements of the Mysore Civil Veterinary Department, but also the demands from several other Indian States, such as Hyderabad, Baroda, Coorg, Pudukkottai, Cochin, Kolhapur, Sangli, etc. The preparation of Rinderpest Goat Virus, Black Quarter Filtrate, and Anti Black Quarter Serum, Anti Haemorrhagic Septicaemia Serum and Haemorrhagic Septicaemia Vaccine, Sheep-pox Vaccine and Anti Anthrax Serum etc., which was undertaken on a much larger scale after the Institute was shifted to its present new buildings at Hebbal, in March 1932, was continued so satisfactorily and in such increased quantities as to make it possible to have large stocks of all these products, and to meet fully and promptly the demands for them from within as well as from outside the State.

In addition to the above a new product viz. Fowl Cholera Vaccine was prepared during the year under report and supplied to a few Veterinary Inspectors of the State to try in the field and report the results.

In this connection it may be stated with confidence that the products prepared in this Institute are becoming more and more popular, and

this is evidenced by the fact that of late (viz. from 1932-33) large and repeated indents are being received regularly from outside the state also, for almost all the important products prepared in the Institute, while in the previous years indents were being received from outside the state, only for Rinderpest Virus and Serum.

The total quantity of the various products other than Rinderpest Serum, supplied to Hyderabad alone, during the year under report is 93,500 doses as against only 35,000 doses in the previous year, viz. about twice to that of the previous year.

Hitherto Sera, and Virus, and Vaccines were being supplied to the Mysore Civil Veterinary Department as and when indents were received from the Veterinary Inspectors, without charging the cost of the products to the Department. But as this procedure involved underestimation of the Revenue of the Institute and the expenditure of the Civil Veterinary Department, the Government were pleased to direct in their Government Order No. D. 1116-17/ C.V. 94-32-4 dated 4-9-1934 that credit in accounts should be given to the Serum Institute by the Civil Veterinary Department, for the supplies received.

In this connection it has to be observed that the total quantity of the products indented for by the Mysore Civil Veterinary Department during the year under report (viz. after the above Government Order was given effect to) was much less than that indented for in the previous years, chiefly perhaps

on account of the exercise of greater economy by the Staff of the Civil Veterinary Department in the use of these products. The further decline in the number of outbreaks of Rinderpest especially in the State and the substitution of Goat Virus, to some extent, for the Serum simultaneous method of inoculation against Rinderpest also account partly for the fall in the indents for Anti Rinderpest Serum and Bovine Virus during the year.

However, in spite of the considerable fall in the supplies made to the Mysore Civil Veterinary Department and the appreciable reduction in the prices of the Sera and Vaccines given effect to from 1-4-1933 in order to keep on a par with the reduced rates adopted by the Imperial Institute of Veterinary Research, Muktesar, it is indeed highly gratifying to note that it has been possible to effect sales during the year under report to the extent of Rs. 1,27,299/- against a total expenditure of Rs. 83,407/-

As a result of the successful experiments conducted with Goat Virus as a single vaccine against Rinderpest, both in the Institute and on the field, Government have been pleased to approve of the use of " Goat Virus alone" as a prophylactic measure against Rinderpest among cattle in the State, in preference to Serum Simultaneous method of inoculations, although in the case of buffaloes " Sero Virus Simultaneous inoculations will have to continue to be adopted. The obvious advantage of this is that the cost of protection against

* Babesia motasi * wenyon 1926 a large piroplasm was encountered for, what is believed to be, the first time in India, in the blood of sheep during the course of experiments in this Institute with Goat Virus as a Vaccine for sheep against Rinderpest. A descriptive note of the finding was published in the Indian Veterinary Journal, April 1934.

Four professional papers were contributed by the staff during the year, out of which one was contributed to the journals and three were presented before the sixth annual meeting of the Mysore Veterinary Medical Association during the month of May 1934.

2. ADMINISTRATION:- I was in charge of the Institute throughout the year under report.

Mr. P.U. Nayar, Bacteriological Assistant, was on privilege leave for 7 days with effect from 17-12-1933 with permission to affix Christmas and New Year holidays. No acting arrangements were proposed as the leave was only for a short period.

3. STAFF:- The staff of the Institute at the close of the year was as follows:-

VETERINARY SECTION.

1) 6 Veterinary Inspectors and 11 Salustries.

OFFICE SECTION.

2) 1 Head Clerk, 1 Head Accountant, and 5 Clerks.

LABORATORY SECTION.

3) 1 Mechanic, 2 Laboratory attendants, 1 Mediaman, and 1 Serum Room Attendant.

PACKING SECTION.

Carpenter and 1 Packer.

MENIAL STAFF.

5) 1 Dairy, 63 Cattlemen, Five Peons, 2 Watchmen, and 6 Thoties.

While making a reference to the above staff I am glad to state that the whole of the staff which was temporary for over 5 years, was confirmed with effect from 1-4-1933 as per Government Order No. 4973-75. C.V. 60-32-9 dated 17-4-34 consequent on the Institute having been made permanent on a reorganised scale in Government Order No. D. 5392-3 C.V. 60-32-3 dated 27-4-1933.

The Government were also pleased to sanction in their Government Order No. D. 4245-6/C.V. 45-33-2 dated 27-2-34, the proposal to add the post of the Bacteriological Assistant as well as the six posts of the Veterinary Inspectors of the Institute to the cadres of the Assistant Superintendent and Veterinary Inspectors of the Civil Veterinary Department, respectively, with a view to afford scope for the incumbents to have their cases considered for promotion to higher grades with reference to their seniority and merit in the department.

4. BUILDINGS:- The present cattle sheds having only thatched roofings are required to be repaired very frequently as they are situated on a high and open plain exposed to heavy winds from all sides; and in fact, on account of the winds during May 1934, five cattle sheds collapsed completely while two others were badly damaged. I have to represent therefore that much anxiety and recurring expenses would be saved if permanent

and pressed for on many an occasion in the previous years.

The Reserve Depot, where the newly purchased animals are kept under observation prior to their use in the Institute, continued to be located in the old Rifle Range Buildings. But as these buildings are in a very dilapidated condition and are not suited for housing cattle, and moreover as the plot of land including the buildings has subsequently been handed over to the Military Department, the Government have sanctioned the construction of a New Reserve Depot for the Institute. This building is proposed to be located on a suitable site in the adjacent Forest Plantation area which is expected to be handed over to the Department, when the construction of the building will be taken up by the Public Works Department.

Another important item of work under buildings, deserving urgent consideration is the construction of Residential Quarters to the officers as well as to the staff of the Institute. The Director was pleased to recommend to Government in the previous year the construction of quarters at least for the Superintendent and for a Veterinary Inspector on duty, for the present, in order to ensure better supervision and management, to facilitate research work requiring continuous attention, and to enable closer and more frequent observation of test and experimental animals. The need for quarters at the institute for the staff is felt all the more on account of its long distance to the City,

and this fact has already been reported to Government also. But due to obvious reasons of financial stringency these proposals have not yet been sanctioned. However, it is believed that this matter will be considered favourably at least during this year, and a beginning made early to provide the quarters.

Certain minor repairs and alterations will have to be effected to the present Institute buildings and some improvements will also have to be attended to as suggested by the Deman during his inspection of the Institute in March 1934. Necessary action is being taken by the Public Works Department to carry out some of these minor works early.

The incinerator which was constructed in 1932 has been badly in need of certain urgent improvements to make it efficient and the same is being attended to by the Public Works Department.

A De Laittee Gas Plant was installed during the year and it is working satisfactorily.

The avenue trees and shade trees consisting mostly of Eucalyptus, Peltiform, Cassia Javanica, Gold Mohurs etc., which were planted during the last year are coming up very well. In addition to these plants about 60 mango grafts and 18 Bougainvillea were also planted in June 1934.

During the year under report a " Dip " with a water tap adjacent to it, was put up by the road side at the main entrance to the Institute, to facilitate washing the feet of the fresh animals with antiseptic lotion before they are admitted into the Institute.

in all on Veterinary Science and other scientific subjects as against 35 volumes in the previous year. Ten periodicals are being subscribed for by the Institute as in the previous year, in addition to 6 journals received in circulation from the office of the Superintendent, Civil Veterinary Department, and 4 from the office of the Director of Agriculture. Besides, a few bulletins and reports were also received in exchange.

A system of card indexing of the publications received in this Library under subject and author is proposed to be undertaken during next year.

The need for some more journals and books is very keenly felt in order that the officers of the Institute may keep themselves posted with up-to-date information on the improved technique and the latest scientific developments. Proposals have therefore been submitted to the Director of Agriculture in the matter for his sanction. It is hoped that necessary permission will be accorded early to subscribe for at least some more important periodicals and to purchase some valuable books in consideration of the fact that such books and journals go a long way to improve the efficiency especially of the technical and scientific work of the Institute.

6. ANIMALS:- The animals required for the production of sera and vaccines, were continued to be purchased from the contractors by

tender system as in the previous year while the small animals required for tests, were purchased locally as and when required. However, in order to minimise the purchase of these small laboratory animals, a system of breeding them in the Institute was introduced as a measure of economy and convenience, and it has given very satisfactory results.

During the year under report 197 fresh he buffaloes, 111 discontinued Rinderpest serum makers, 34 Anthrax serum makers, 1029 buffalo calves, 20 bull calves, 474 goats, 19 sheep, 38 birds and 102 laboratory small animals were used for the production of the several biologicals and for tests and experiments.

~~[illegible]~~ There were 2 unused serum producers on hand on 1st July 1933. During the year under review 195 animals were purchased making up a total of 197 animals of which 60 were used for Anti Haemorrhagic septicaemia serum production, 2 for Anti Black Quarter serum production and 45 for Anti Rinderpest serum production. 62 of the Rinderpest serum donors were later immunised and used for preparing Anti Black Quarter serum and 77 for Anti Haemorrhagic septicaemia serum. There were 55 deaths among the producers of the several sera during the year as against 54 in the previous year.

Production and Issue of Biological Products.

1. Bovine Rinderpest Virus:- There was a considerable fall in the demand for Bovine Virus from the Mysore Civil Veterinary Department during the year as compared with that of the previous year. This is mainly attributable to the further decline in the incidence of rinderpest in the state and to the introduction of Goat adapted Virus as ~~calling~~ adapted the earnest endeavour made during the year by the Veterinary Inspectors to confine their indents to their actual requirements. Accordingly the number of buffallo bull calves used in the Institute for the purpose and the total quantity produced were also reduced proportionately. Only 720 buffalo calves were used this year as against 1,139 calves used in the previous year. Out of the 720 calves used for the production of virus 125 (viz. about 18%) were rejected as non-reactors, i.e. as not showing the typical symptoms of the disease in the

against 147 rejected last year for the same reason. 2,93,675 c.c's of Bovine Virus were produced this year as against, 5,20,775 c.c's in the preceding year. 98,500 c.c's of the virus were supplied for use at the Civil Veterinary Department as against 2,51,550 c.c's supplied in the previous year.

A slight increase is, however, noticeable in the supplies made to Coorg. 7325 c.c's were supplied this year as compared with 7300 c.c's supplied last year.

125 c.c's were used by the staff of the Institute for immunity tests on Amrit Mahal cattle (herd No.3) that had been protected by Goat Virus alone in 1932-33. 13,450 c.c's were made use of in the Institute for inspecting the virus producers, immunising the serum producers and for experimental purposes.

2. GOAT ADAPTED RINDERPEST VIRUS:- An important feature of work during the year under report is the introduction of Goat Virus alone in some parts of the State, for immunising animals against Rinderpest, in place of the usual serum-virus simultaneous method of inoculation, as a result of the large number of successful experiments detailed in last year's Annual Report and further satisfactory experiments and tests conducted with this virus as a Vaccine for Rinderpest.

Two strains of " Fixed " virus - Muktesar and Bangalore are being maintained by passages through goats. By the end of the year

under report the former underwent 146th passage and the latter 104th passage through goats without any noticeable alteration in their specific character. Serological tests both in the Institute and on the field have confirmed the safety and efficacy of the virus. 474 goats were made use of for maintaining the two strains of virus and for production of goat virus, as against 341 last year. 29,728 c.c's of goat virus were produced this year as against 23,025 c.c's last year and 4690 c.c.'s were issued to the Civil Veterinary Department during the year as against only 400 c.c's supplied in the previous year.

3. ANTI RINDERPEST SERUM:- The production of this serum and the number of buffaloes required for the purpose had also to be considerably reduced for the reasons mentioned under Bovine Rinderpest Virus. 165 he-buffaloes were used this year as against 316 during last year for producing Anti Rinderpest Serum. 3,30,320 doses (5 c.c. per dose) of the serum were produced this year as against 5,04,525 doses in the preceding year. The total quantity of serum available for issue during the year under report was 6,32,320 doses including 2,02,000 doses on hand at the commencement of the year. 1,70,900 doses were supplied to the Mysore Civil Veterinary Department and 2,13,000 doses to places outside the State such as Hyderabad, Coorg, and Baroda as against 2,44,550 doses and 2,59,600 doses issued respectively during the previous year; and 8,050 doses of the serum were used in the Institute for immunising the serum-makers.

4. ANTI HAEMORRHAGIC SEPTICAEMIA SERUM:- 80 fresh buffaloes and 77 out of the animals used previously for the production of anti rinderpest serum were immunised against haemorrhagic septicaemia to produce the serum, as against 80 buffaloes used last year. 1,06,691 1/3 doses (15 c.c. a dose) of this serum were manufactured as against 38,606 doses in the previous year. Out of a total of 1,18,234 1/3 doses, including 8,543 doses remaining on hand at the beginning of the year, 26,580 doses were supplied to the Mysore Civil Veterinary Department and 41,440 doses to places outside the State during the year as against 25,052 2/3 and 17,300 doses respectively during the previous year. Hyderabad and Cochin continued to place indents for this serum in considerably larger quantities than in the previous year. The States of Kolhapur, Sangli and Jamalkhanji were also supplied with this product for the first time this year.

5. ANTI BLACK QUARTER SERUM:- Two fresh he-buffaloes and 64 discontinued Rinderpest serum makers were immunised and used for producing this serum as against 46 used last year.

65,954 doses were produced during the year as against 44,530 doses in the previous year. The requirements of the Mysore Civil Veterinary Department for this product were much less than that in the previous year as black quarter filtrate alone was used extensively to control the disease in the State. 16,160 doses of the serum were supplied this year as against 35,006 doses supplied last year. On the other hand 20,500 doses were sold to Hyderabad this year as against 11,500 in the preceding year. Rishi

Valley Estate and Pudukkottai State purchased 60 doses and 700 doses respectively for the first time this year.

6. ANTI-ANTHRAX SERUM :- No fresh animals were used this year for making this serum. The animals that were immunised and used for making the serum in the latter part of last year, were continued to be bled this year. 30,800 doses (15 c.c. a dose) were produced during the year as against 18,730 doses in the previous year. 2000 doses were sold to Hyderabad as against 1,000 in the preceding year. 140 doses to Cochin State and 80 doses to Sanjira State were sold for the first time this year.

## VACCINES.

7. HAEMORRHAGIC SEPTICAEMIA VACCINE:- To meet the very large demands for this product this year especially from Hyderabad and Baroda the output had to be increased over 2½ times that of previous year. 63,800 doses (5 c.c. a dose) were manufactured as against 24,130 doses prepared last year. At the commencement of the year there were 2500 doses on hand. Thus the total quantity available for issue was 66,300 doses. 41,250 doses were supplied to the Mysore Civil Veterinary Department as against 40,330 doses last year. 16,000 doses were sold to Hyderabad and 4,800 to Baroda as against 1,600 and 1,690 doses sold respectively during last year.

8. BLACK QUARTER FILTRATE:- There was an increase in the outturn of this product also. 1,66,950 doses were prepared as against 1,21,250 in 1932-33. Although the indent from the Mysore Civil Veterinary

Department was slightly less being, 1,37,400 doses as against 1,40,187 in the previous year, the demand from Hyderabad was over 4 times what it was last year. 17,000 doses were sold to Hyderabad this year as against 4,000 doses last year. 100 doses to Kishi Valley Estate and 700 doses to Kudukkottai State were sold for the first time during the year.

BLACK QUARTER FILTRATE:- Whereas Black quarter filtrate is a germ-free product, this is a formalinised whole-killed culture of the organisms and as such, it is believed to have a higher antigenic value.

5,000 doses of this product were made experimentally during the year and 1,200 doses were supplied to Veterinary Inspectors of the state for use. The reports from the Veterinary Inspectors who had occasion to use it were quite satisfactory and it has been suggested to the Superintendent, Civil Veterinary Department to make use of it on a larger scale in preference to Black quarter filtrate in notorious black quarter areas especially.

ANTHRAX VACCINE:- There was a greater demand for this product this year than in the previous year. During the year 92 c.cs (concentrated) (or 92,00 doses) of the vaccine were prepared and 67.5 c.c (concentrated) (or 6750 doses) were supplied to the Mysore Civil Veterinary Department as against 59.8 c.c (concentrated) (5980 doses) prepared and 55.05 c.c's (concentrated) (5505 doses) supplied last year.

POLYVALENT VACCINE:- 2050 doses of this vaccine were prepared experimentally for the

first time during the year under report. After testing for safety and potency in the Institute 200 doses were issued to Veterinary Inspectors for use on fowls.

Statistical statements of all the products showing the quantities produced, supplied, and balances remaining for the year 1933-34 together with details as to the sales effected and expenditure incurred are appended to this report.

## EXPERIMENTAL & RESEARCH

ANIMAL BACTERIOLOGY AND PATHOLOGY:- Isolation, identification and determination of the virulence of the several strains of Black quarter, Haemorrhagic Septicaemia, Anthrax and Foul Cholera organisms and the determination of pathogenicity of the strains of Viruses of Rinderpest, Sheep-pox and fowl-pox, were continued besides the usual Maintenance of stock cultures, preparations of antigens for Immunising serum-makers and for testing serum, Vaccines &c

In addition, cultural examinations aerobic and anaerobic, of 703 samples of Rinderpest virus for sterility from other contaminations were made during the year.

pH estimations of 86 samples of culture media and 50 samples of serum were also done.

(Miscellaneous work)

Details of smears examined:-

| | |
|---|---|
| Anthrax ... | 66 |
| Black-quarter .. | 120 |
| Pasturella ... | 382 |
| Glanders ... | 1 |
| Prptozoa ... | 1432 |
| Miscellaneous .. | 1059 |
| Total | 3062 |

A systematic post mortem examination of the virus producers and other experimental animals and birds that died in the Institute were conducted as shown in the following table:-

Table showing the kinds of animals examined.

| Kind of Animal. | Rinderpest. | Haemorrhagic-Septicaemia. | Black-quarter | Anthrax | Fowl Cholera | Others | Total |
|---|---|---|---|---|---|---|---|
| Buffaloes | 5 | 40 | 5 | - | - | 5 | 55 |
| Buffalo Calves | 544 | 82 | 12 | - | - | 30 | 668 |
| Goats | 195 | - | - | - | - | 14 | 209 |
| Sheep | 2 | - | - | - | - | 4 | 6 |
| Bull calves | | 13 | - | - | | - | 13 |
| Cow | | - | - | - | - | 1 T.B. | 1 |
| Rabbits | - | 21 | - | 7 | - | 40 | 76 |
| Guineapigs | - | - | 29 | 8 | - | 8 | 45 |
| White rats | - | 1 | 2 | - | - | 23 | 26 |
| Poultry | - | - | - | - | 17 | 5 | 22 |
| Horse | - | - | - | - | - | 2 | |

28

RINDERPEST.

BOVINE [illegible] calves were used for production of bovine virus. The standard of virulence of the strain used throughout except once, [illegible] was found to [illegible] virus was found to [illegible] But a [illegible] virus with original [illegible] of calves was effected by [illegible] and subsequent inoculation [illegible] calves.

GOAT VIRUS:- Certain investigations bearing on the practical application of goat virus as a single Vaccine against rinderpest and were started last year, were continued and others of similar practical value were [illegible]

SIMULTANEOUS INOCULATION OF SERO-VIRUS AND GOAT VIRUS:- In the sero-protective method of inoculation it is accepted that [illegible] follow the sero-virus inoculation [illegible] virus along on the 6th or 7th day while yet the serum effect lasts as a safeguard against the [illegible] of the 1st virus now [illegible] in virulence at the time of administration. In the case of goat virus [illegible] if a brief acting dose of goat virus is [illegible] especially [illegible] virus as [illegible] inoculated animals, [illegible] on or about the 7th day by which time the extent of reaction, if any, to the first dose will have been [illegible]

PERIOD OF VIABILITY OF GOAT VIRUS PRESERVED IN COLD STORAGE:-

Experiments to ascertain the period of viability of Goat Virus preserved in cold storage were continued this year. Eight samples of Goat Virus were preserved in cold storage for a week. Then from the 8th day onwards only one sample of virus was used on a batch of 3 calves each day up to the 15th day. The result of the tests is tabulated hereunder:-

GOAT VIRUS PRESERVED IN REFRIGERATOR

| Group No. | Material inoculated. | No. of days preserved in cold storage. | Animal numbers. (buffalo calves) | Dose of Goat Virus | Reaction to Goat Virus | Interval between Goat and Bovine Virus. (in days) | Result of test inoculation. | Remarks. |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| I | Goat Adapted Virus. | 8 | 722 | 5 c.c | Reacted | 15 | Immune | Lived |
| | " | " | 723 | " | Mild thermal. | " | " | " |
| | " | " | 724 | " | Reacted | " | Died | Died on the 3rd after giving bovine Virus. R.D.-Rinderpest. |
| II | " | 9 | 727 | " | Mild thermal. | " | Immune | Lived |
| | " | " | 728 | " | " | " | " | " |
| | " | " | 729 | " | " | " | " | " |
| III | " | 10 | 735 | " | Very mild thermal. | " | " | " |
| | " | " | 736 | " | Mild thermal | " | " | " |
| | " | " | 737 | " | Very mild thermal. | " | " | " |
| IV | " | 11 | 740 | " | Reacted | " | " | " |
| | " | " | 741 | " | Very mild thermal. | " | " | " |
| | " | " | 742 | " | Mild thermal | " | " | " |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| V | Goat adapted Virus. | 12 | 745 | 5 c.c. | Mild thermal | 15 | Immune | Lived. |
| | " | " | 746 | " | " | " | " | " |
| | " | " | 747 | " | " | " | " | " |
| VI | " | 13 | 760 | " | Very mild thermal | " | " | " |
| | " | " | 761 | " | No reaction | " | " | " |
| | " | " | 762 | " | " | " | " | " |
| VII | " | 14 | 765 | " | Mild thermal | " | " | " |
| | " | " | 766 | " | " | " | " | " |
| | " | " | 767 | " | " | " | " | " |
| VIII | " | 15 | 768 | " | No reaction | " | " | " |
| | " | " | 769 | " | Mild thermal | " | " | " |
| | " | " | 770 | " | Very mild thermal. | " | " | " |
| IX | " | " | 999 | | Rejected | 15 | Died. Died on the 2nd day after giving Bovine Virus. T.D.-Rinderpest. | |
| | " | " | 1000 | " | Thermal | " | Immune | Lived. |
| | " | " | 1001 | " | Rejected and died | | | Died before getting the test dose. |

From the above it was seen that the calves that got the virus preserved in the Refrigerator up to ten days showed good reaction whereas those that received the virus 10 to 15 days old in the refrigerator evinced either mild or no reaction. Yet when all these animals were tested later with Virulent Bovine Virus all of them were fund to be immune to it.

Results of further experiments to test the potency of goat virus kept in cold storage for 16 to 20 days may be tabulated as follows:-

(Please turn over)

| Group No. | Material inoculated. | No. of days preserved in cold storage. | Animal numbers. (buffalo calves) | Dose of Goat Virus | Reaction to Gaot Virus | Interval between Goat and Bovine Virus | Result of test inoculation | Remarks. |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| I | Goat Adapted Virus. | 16 | 1004 | .5 c.c. | Died | - | - | Distomasis |
| | " | " | 1005 | " | Mild thermal reaction | 15 | Immune | Lived |
| | " | " | 1006 | " | Reaction | " | " | Lived |
| II | " | 17 | 1007 | " | Very mild thermal | 16 | " | Lived |
| | " | " | 1008 | " | No reaction | " | Reacted | Died E.D.-Rinderpest |
| | " | " | 1009 | " | " | " | Immune | Lived |
| III | " | 18 | 1010 | " | Reacted & died | | Died before getting the test dose E.D. — Rinderpest. | |
| | " | " | 1011 | " | No reaction | 15 | Immune | Lived |
| | " | " | 1012 | " | " | " | " | Lived. |
| IV | " | 19 | 1015 | " | " | " | " | Lived |
| | " | " | 1016 | " | " | " | Reacted and died | Rinderpest |
| | " | " | 1017 | " | " | " | Immune | Lived |
| V | " | 20 | 1018 | " | " | " | Reacted and Died | Rinderpest. |
| | " | " | 1019 | " | " | " | " | " |
| | " | " | 1020 | " | " | " | Reacted | Lived. |

The 16,17, and 18 days old virus gave rise to a fairly good reaction and a subsequent test with bovine virus revealed that about 85% of the animals had aquired immunity. But the last two samples i.e. 19 and 20 days old virus caused no reaction at all and when they ~~animals that got it~~ were later given bovine virus, 50% of them succumbed to the disease.

This experiment was extended with goat virus

preserved in cold storage for 21,29 and 39 days and the results are set down in the following table which shows that virus kept in the cold storage for 21 days and over loses its antigenic value completely as none of the calves that got the virus withstood the test dose of virulent bovine virus.

| Group No. | Material inoculated. | No. of days preserved in cold storage. | Animal numbers (buffalo calves) | Dose of goat virus | Reaction to goat Virus | Interval between goat and bovine Virus. | Result of test inoculation. | Remarks |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| I | Goat Adapted Virus | 21 | 586 | 5 c.c. | No reaction | 10 | Reacted | Died Rinderpest. |
| | " | " | 587 | " | " | " | " | " |
| | " | " | 588 | " | " | " | " | " |
| II | " | 29 | 650 | " | " | " | " | " |
| | " | " | 651 | " | " | " | " | " |
| | " | " | 652 | " | " | " | " | " |
| III | " | 39 | 684 | " | " | " | " | " |
| | " | " | 685 | " | " | " | Reacted and died. | Rinderpest |
| | " | " | 686 | " | " | " | " | " |

From the experiments detailed above it may be concluded that goat virus kept in cold storage up to 10 days may be safely and effectively used for purposes of immunisation, although sufficient potency is seen to be retained in the virus even up to 15 days.

VIABILITY OF GOAT Adapted VIRUS PRESERVED AT ROOM TEMPERATURE

Nine samples of virus were kept at room temperature well protected from light for this purpose and each sample was used on a batch of 3 buffalo bull calves as tabulated hereunder. The physical appearance of the samples were unaltered at the time of use except of the

last one which had become slightly dark in colour.

GOAT VIRUS PRESERVED IN ROOM TEMPERATURE.

| Group No. | Material inoculated. | No. of days preserved in Room Temperature | Animal numbers (buffalo calves) | Dose of Virus | Reaction to Virus | Interval between Goat virus and bovine virus. (in days) | Result of Bovine virus-test. | Remarks |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| | | | | I TEST. | | | | |
| I | Goat Virus | 5 | 603 | 5 c.c. | Mild thermal. | 10 | No reaction | Immune. |
| | " | " | 604 | " | Typical thermal | " | " | " |
| | " | " | 605 | " | Mild thermal | " | " | " |
| II | " | 6 | 606 | " | Thermal | 17 | " | " |
| | " | " | 607 | " | " | " | " | " |
| | " | " | 608 | " | " | " | " | " |
| III | " | 7 | 621 | " | No reaction | 10 | Reacted Died of Rinderpest within 10 days after the test dose of Virus. | |
| | " | " | 622 | 5 c.c. | Mild thermal | 10 | Reacted | Lived |
| | " | " | 623 | " | No reaction | 10 | " Died of Rinderpest on the 11th day after the test dose of Virus. | |
| IV | " | 8 | 624 | " | Reacted | 18 | No reaction | Immune |
| | " | " | 625 | " | No reaction | " | Mild reaction. Died of Rinderpest on the 12th day after the test dose of Virus | |
| | " | " | 626 | 5 c.c. | No reaction | 18 | Reacted | Died of Rinderpest on the 11th day after the test dose of Virus |
| | " | 9 | 633 | 5 c.c. | No reaction | 14 | Reacted | Lived |
| | " | " | 634 | " | Mild thermal | " | " | Died of Rinderpest on the 8th day after the test dose of Virus. |
| | " | " | 635 | 5 c.c. | Mild thermal | 14 | No reaction | Lived |

(illegible)

(Continued)

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| VI | Goat Virus | 10 | 639 | 5 c.c. | Not appreciable | 13 | Reacted | Lived |
| | " | " | 640 | " | No reaction | " | " | " |
| | " | " | 641 | " | " | " | " | " |
| VII | " | " | 644 | " | " | 12 | Reacted-Died of Rinderpest within 11 days after the test dose of virus. | |
| | " | " | 645 | " | Reacted | 15 | No reaction | Lived |
| | " | " | 646 | " | No reaction | 15 | Reacted | Died of Rinderpest within 11 days after the test dose of virus |
| VIII | " | 12 | 647 | " | No reaction | 11 | Reacted | Died of Rinderpest within 10 days after the test dose of virus |
| | " | " | 648 | " | No reaction | 11 | Reacted | Lived. |
| | " | " | 649 | " | " | " | Mild thermal | Lived |
| IX | " | 13 | 655 | " | " | 13 | No reaction | " |
| | " | " | 656 | " | Reacted | - | - | Died on the 12th day after inoculating with Goat vi |
| | " | " | 657 | " | No reaction | 13 | No reaction | Lived. |

The above experiment shows that the first and second batches that got the 5th and 6th day old virus respectively evinced a fairly good thermal reaction, while the other batches showed none at all. A subsequent test dose of bovine virus given after the lapse of a fortnight gave rise to no reaction in these batches proving thereby that the 5th and 6th days old virus had not lost its efficacy, whereas in the case of the remaining batches that received virus 7 days old and over, the test dose gave over 70% reaction with a mortality of 43%. But when a second test was conducted with samples of virus preserved in room temperature for 7 to 10 days on 4 batches of calves the results showed, as can be seen from the following table, that the virus retained its antigenic value upto 10 days in room temperature.

P.T.O

II TEST.

| Group No. | Material inoculated. | No. of days preserved in room temperature | Animal numbers (buffalo calves) | Dose of Virus | Reaction to virus | Interval between Goat virus and bovine virus. | Result of Bovine virus test | Remarks. |
|---|---|---|---|---|---|---|---|---|
| I | Goat virus | 7 | 1021 | 5 c.c. | No reaction on the 5th day of bovine virus. Etiological diagnosis - doubtful. | 15 | No reaction | Died |
| | " | " | 1022 | " | Thermal | 15 | No reaction | Lived |
| | " | " | 1023 | " | Very mild thermal. | " " after last dose of virus. | Died on the next day of giving test | |
| II | " | 8 | 984 | " | Mild thermal | 15 | No reaction | Lived |
| | " | " | 985 | " | Very mild thermal. | " | " | " |
| | " | " | 986 | " | Reacted | " | " | " |
| III | " | 9 | 987 | " | Mild thermal | " | " | " |
| | " | " | 988 | " | Thermal | " | " | " |
| | " | " | 989 | " | Reacted | " | " | " |
| IV | " | 10 | 993 | " | Thermal | " | " | " |
| | " | " | 994 | " | " | " | " | " |
| | " | " | 995 | " | " | " | " | " |

Further tests are therefore necessary to arrive at a definite conclusion in the matter and they will be undertaken next year.

REACTION TO GOAT VIRUS IN SHEEP.

As sheep are known to be susceptible to Rinderpest, Goat Virus was tried on a batch of 6 sheep to gauge the extent of reaction in them for purposes of immunisation. Four out of 6 evinced good thermal reaction and the remaining two did

not respond. But owing to the resuscitation of Babesia motasi in their blood during the period of reaction the experiment could not be completed. Further work in this connection will be taken up later on.

GOAT VIRUS WITH AND WITHOUT ANTI-SERUM ON BUFFALOES

It has been the experience of both laboratory and field workers in Mysore that goat virus alone as a single vaccine on buffaloes gives rise to a reaction of an intensive nature with a small per-centage of mortality and in order to confirm this view and to ascertain whether a controlling dose of serum is absolutely essential to minimise the severity of the reaction, the following work was taken up.

A batch of 50 buffaloes got for the production of Anti Haemorrhagic Septicaemia Serum was subjected before immunisation against Haemorrhagic septicaemia to "Goat Virus alone" inoculation against rinderpest, but over 80% of these animals showed severe reactions with 2 deaths.

Subsequently a batch of 12 calves were inoculated with goat virus and anti rinderpest serum simultaneously, the dose of the latter varying from 10 c.c. to 30 c.c. per 600 lbs. body weight. From the reactions observed it is concluded that the use of anti serum with Goat Virus is advisable in order to ensure safety and that 15 to 20 c.c. per 600 lbs. body weight of the serum appears to be an adequate controlling dose for the purpose.

MINIMUM INFECTIVE DOSE OF GOAT VIRUS.

Some workers have recorded that Rinderpest virus of bovine origin is capable of infecting susceptible cattle in dilutions up to 1 in 10,000 but recently Hall from Nigeria reports that he succeeded in infecting cattle with 0.2 to 0.02 c.c. but failed with 0.002 c.c. Apart

from this difference of opinion regarding bovine virus it is also to be taken into consideration that goat adapted virus is almost an attenuated live vaccine and as such the range of dilution may even be more limited, in the matter of minimal infective dose, than that of bovine virus. In order to work this out 1:10,000 and 1 : 1,000 dilutions of goat virus were tried on two batches of buffalo calves and both the batches failed to show any reaction. Subsequent immunity test with bovine virus gave rise to severe reaction with 50% mortality revealing thereby that goat virus in these higher dilutions is not capable of causing infection. Further work in this connection is in progress.

FIELD EXPERIMENT WITH GOAT VIRUS.

25 heads of cattle ranging from 1 to 5 years of age out of 213 Amritmahal cattle of Herd No. 3 which had been protected against rinderpest with goat virus alone during February 1933, were tested with bovine virus for immunity, after an interval of 8 months i.e. during the month of October 1933. Daily observations for 10 days showed no reaction of any kind. 3 bull calves on the scene of the experiment at Birur and 12 buffalo bull calves in the Institute were maintained as controls for the test virus. Out of these 15 controls 13 animals developed severe reactions and 8 of them succumbed to the disease.

From the above it is seen so far that cattle protected by goat virus acquire a solid immunity which lasts up to 8 months. The remaining untested animals of the herd will be taken up in batches at varying intervals for further tests to ascertain the longevity of the immunity conferred on cattle by Goat rinderpest virus.

~~(Please turn over).~~

## TISSUE VACCINES AGAINST RINDERPEST.

Vaccines prepared from various glands such as Spleen, Lymphatic glands, and testicles of bovines, affected with Rinderpest have been tried by several workers and after extensive trials with these various glandular preparations, spleen tissue vaccine has been considered to be the best. The spleen extirpated from a goat infected with rinderpest at the height of reaction was made use of in the preparation of this vaccine in the Institute. The vaccine with 0.5% phenol, preserved in cold storage for 3,16,34,59 and 90 days was used on buffalo calves which were subjected to an immunity test after an interval of about 3 weeks. An equal number of goats also was simultaneously used for a comparative study.

One sample of vaccine with formaline as preservative was also prepared, and a test was conducted, but as the result was not satisfactory further work will have to be undertaken.

The results of the tests are for convenience, tabulated hereunder.

DETAILS OF INOCULATION AND RESULT OF GOAT SPLEEN VACCINE AGAINST RINDERPEST.

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A.

| Serial No. of batches | Material inoculated. | No. of days preserved in cold storage | Buffalo calves. | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Animal No. | Dose | Reaction to vaccine. | Interval between Vaccine & immunity test with virus | Result of immunity test with Bovine Virus. | Remarks. |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 1 | Goat spleen Vaccine. (carbolised) | 3 | 719 | 1 c.c. | - | - | - | Died on the 4th day due to causes other than Rinderpest. |
| | -do- | " | 720 | " | Mild theimal | 22 | Immune | No symptoms. |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| | Goat spleen Vaccine (Carbolised) | 3 | 721 | 2 c.c. | Nil | 22 | Immune | No symptoms. |
| 2. | -do- | 16 | 738 | 1 c.c. | Mild | 22 | " | Mild thermal reaction only between 4th and 6th day. |
| | -do- | " | 739 | " | " | 22 | " | |
| | -do- | " | 740 | " | " | 22 | " | |
| 3 | -do- | 34 | 805 | " | Nil | 22 | " | No symptoms. |
| | -do- | " | 806 | " | " | 22 | " | -do- |
| | -do- | " | 807 | " | " | 22 | " | -do- |
| 4 | -do- | 59 | 832 | " | " | 20 | " | -do- |
| | -do- | " | 833 | " | " | 20 | Reacted | Severe thermal reaction from 4th to 7th day & specific lesions on the 7th day. |
| | -do- | " | 834 | " | " | 20 | " | |
| 5 | -do- | 90 | 923 | 5 c.c. | " | 22 | " | Thermal reaction from 4th to 9th day, specific lesions on the 8th day. |
| | -do- | " | 924 | " | " | 22 | " | Diarrhoea and faint mouth lesions. |
| | -do- | " | 925 | " | " | 22 | Immune | No symptoms. |
| 6 | Goat spleen Vaccine (formalised) | 5 | 871 | 1 c.c. | No reaction | 15 | Reacted | Lived. |
| | -do- | " | 872 | 1 c.c. | " | 15 | " | Died of Rinderpest. |
| | -do- | " | 873 | " | " | 15 | " | -do- |

DETAILS OF INOCULATION AND RESULT OF GOAT SPLEEN VACCINE AGAINST RINDERPEST.

--o0o--

B.

| Serial No. of batches | Material inoculated. | No. of days preserved in cold storage. | GOATS(FOR CONFIRMATORY TEST). Animal No. | Dose | Reaction to Vaccine | Interval between Vaccine & immunity test with virus | Result of immunity test with bovine virus. | Remarks. |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 1 | Goat spleen Vaccine (carbolised) | 3 | 254 | 1 c.c | Reacted | - | - | Died before immunity test due to other causes then Rinderpest. |
| | -do- | " | 255 | " | " | 22 | Immune | No symptoms. |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| | Goat spleen Vaccine (Carbolised) | 3 | 256 | 1 c.c. | Reacted | 22 | Immune | No symptoms. |
| 2 | -do- | 16 | 278 | " | " | " | " | Died next day after giving vaccine due to ~~infectio~~ impaction |
| | -do- | " | 279 | " | Nil | 22 | Immune | No ~~-do-~~ Symptoms |
| | -do- | " | 280 | " | " | " | " | ~~-do-~~ -do- |
| 3 | -do- | 34 | 305 | " | Reacted | - | - | No symptoms. |
| | -do- | " | 306 | " | " | 22 | ~~Immune~~ Died | Died on the 5th day* E.D. Rinderpest. |
| | -do- | " | 307 | " | " | Died on the 7th day. | | |
| 4. | -do- | 59 | 347 | " | Nil | 20 | Immune | No symptoms |
| | -do- | 3 | 348 | " | Reacted | 20 | " | Thermal reaction from the 3rd to 5th day after vaccination. |
| | -do- | " | 349 | " | " | 20 | Immune | -do- |
| 5. | -do- | 90 | 398 | 5 c.c. | Nil | 22 | " | No symptoms. |
| | -do- | " | 399 | " | " | 22 | " | Thermal reaction |
| | -do- | " | 400 | " | " | 22 | " | mild thermal reactio |
| 6 | Goat spleen Vaccine (Formalised) | 5 | 368 | 1 c.c. | No reaction | 20 | No reaction | Lived. |
| | -do- | " | 369 | " | " | " | " | " |
| | -do- | " | 370 | " | " | " | " | " |

* E.D. Etiological Diagnosis.

It is seen from the details noted above that the phenolised Vaccine preserved in cold storage upto 34 days gave a mild thermal reaction in bovines and conferred immunity against artificial infection with virulent bovine Rinderpest virus, after about three weeks; while most of the animals that got the vaccine preserved for 59 and 90 days did not evince such immunity on subsequent test.

It would be interesting to mention here that our results almost agree with those of Kerr & Menon (1934) in Bengal. Most of the goats in the confirmatory comparative test showed a typical reaction of rinderpest which is sufficiently indicative of the presence of virus in the vaccine.

## SHEEP-POX VACCINE.

Two batches of sheep were used for making this vaccine.

After scarifying the skin on the chest and abdominal region fairly deeply the strain of glycerinated pox lymph maintained in the Institute was applied and all the sheep showed the pox exanthema more or less well developed along all the lines.

The material from the localised "takes" with aseptic precautions was carefully collected as usual and preserved with glycerine in the cold storage.

It is of interest to note that the glycerinated pox lymph that was used for infecting these batches of sheep had been kept in cold storage for 5 and 7 months respectively prior to their use and yet they were found quite as viable as when fresh.

## FOWL POX VACCINE.

Some preliminary experiments were conducted in order to prepare fowl pox vaccine with pox-material kindly collected by Mr. K. Ranganatha Rao, Assistant Superintendent, Scientific Section, Civil Veterinary Department, from a naturally affected case in Dodballapur Taluk.

Three batches of fowls (3 in each batch) were infected with this material. Six of them took the infection well. Fresh material was collected from the typical lesions and a few pigeons were vaccinated with this material to bring about attennuation of the virus by such passage. A few fowls were also vaccinated to serve as controls.

The pigeons failed to take the infection although in the fowls the disease was reproduced successfully. Pox material was collected from these fowls and preserved for further work.

BLACKQUARTER.

Collection of field strains of blackquarter in the form of strips of affected muscles taken from animals which had succumbed to the disease in the different parts of the State was continued with the kind cooperation of the Officers of the Civil Veterinary Department and added on to the stock in the Institute. In all 15 samples were received from the State during the year and our stock now contains 64 strains including those of Muktesar, Madras Veterinary College, and the National Collection of Type Cultures of Lister Institute, London. All the strains were subjected to tests for purity and pathogenicity before addition to the stock and it was found that some of the local strains were much more pathogenic to our animals than most of the strains received from outside. Corn-liver medium (according to L.S. McClung and Elizabeth McCoy) was tried in addition to Liver broth, Martin's peptone, Noguchi's medium that are in general use for routine work with good results.

BLACKQUARTER FILTRATE: A mixture of the above strains was used for the preparation of the filtrate to make

it as polyvalent as possible. The routine safety and potency tests of the products on buffalo calves were conducted by inoculating 5 to 10 c.c. of the filtrate followed by a test dose of 2 c.c. of virulent culture ( that kills a guinea pig with 0.5 c.c. broth culture in 12 to 24 hours ) after 3 weeks. The results were uniformly satisfactory, even though there was an almost negligible percentage of mortality among some of the protected animals in certain localities. Field results continue to be satisfa

BLACKQUARTER BACTERIN: (Formalised whole killed Culture of Vaccine.)

The same mixed strains were used for the preparation of this product also, and safety and potency tests were conducted as in the case of the filtrate . But a slight swelling was noticed in the animals at the site of inoculation, which subsided uneventfully in a couple of days. It is believed that this Vaccine possesses a better antigenic value than the filtrate perhaps because of the presence of the bacterial bodies in addition to the aggressin. However, this product is still in the experimental stage in our hands.

## FIELD EXPERIMENTS.

During the year under report the Institute undertook some field experimental work only at the Cattle Breeding Station, Ajjampur. Reports were received from this farm about the periodical outbreaks of Black quarter which occured just before and during the monsoon, i.e. during the months of march & April and also during September and October. Sero-Filtrate or Filtrate alone inoculations used to be conducted during the outbreaks. But this did not appear to give the desired effect as in spite of it the seasonal outbreaks continued to occur. As desired

by the Live Stock Expert in Mysore, investigations were undertaken by the Institute and it was found that the low lying marshy black cotton soil of the place is a perennial source of infection, and the only way open for an effective prophylaxis in that locality appeared to be a systematic periodical inoculation (protection) of the young stock on the farm during the months of February and August, i.e., just about a month prior to the time of anticipated outbreaks. It was also decided that animals below 2 years and above 3 months of age should be protected twice a year, ie., during the months of February and August, and animals over 2 years and below 5 years of age once only in a year. Accordingly 210 animals (89 with Sero-filtrate and 121 with filtrate alone) were inoculated during the month of September 1933 and 311 in February 1934 with filtrate alone. It is gratifying to observe that there have been no cases of Black Quarter on the Farm since then.

It may not be out of place here to add that the sero-filtrate simultaneous method of inoculation was also adopted on a Dairy Farm at Madanapally on the scene of an outbreak by their Veterinarian and good results were reported.

Black Quarter Bacterin was sent to the Veterinary Inspectors of Dodballapur and Devanahalli for Field trials, and satisfactory results were reported.

HAEMORRHAGIC SEPTICAEMIA VACCINE.

Bombay broth or meat Digest Broth adjusted to pH 6.8 as well as nutrient broth with the same pH reaction were used as media for the preparation of vaccine.

All the three strains (local, Madras, and Muktesar) maintained in the Institute were incorporated in

the preparations to make the product polyvalent. The vaccine is giving satisfactory results both in our tests and on the field.

## ANTHRAX.

With a view to prepare in this a live spore vaccine for Anthrax, certain preliminary tests, to ascertain the minimal lethal dose of a local strain obtained from a cow, belonging to Mr. C.V. Kannan, soon after its death from the disease, were taken up. From the tests it is observed that 0.0001 c.c. of the culture killed Guineapigs in 36 to 72 hours and 0.00001 c.c. in 4s to 56 hours; where 0.0001 c.c. killed rabbits in 4½ to 5 days and 0.00001 in 4 to 6½ days. But guinea pigs and rabbits which received 0.0000001 c.c. and 0.00001 c.c. respectively survived the dose. Further work in this connection is in progress.

## FOWL CHOLERA.

Some outbreaks of Fowl Cholera are being encountered in the state with severe mortality of about 90 to 100%. The preparation of a Vaccine for this disease was therefore taken up on an experimental scale during the year. Two used cultures kindly made available by the Imperial Institute of Veterinary Research in Muktesar, and by the Madras Veterinary College, were made use of in the preparations. The Vaccine was tested on fowls and the results were satisfactory. Small quantities were issued to three Veterinary Inspectors for field test and report. Two of them could not use it as they had no opportunity to try it. The Veterinary Inspector of Ayaru who used it has also reported very favourably. Further tests with this product will be arranged to be held as occasions arise.

Bovine Haemorrhagic Septicaemia serum was used on occasion on fowls during an outbreak of fowl cholera

by the Veterinary Inspector, Devanhalli, with very good results Attempts are also being made to prepare specific Anti-Fowl Cholera serum for use early next year.

## PROTOZOOLOGY.

Blood smears from animals within this Institute as well as those received from outside, numbering 1432 in all were examined during the year. It may be of interest to record that as a result of examination of many some thousands of blood smears from local buffaloes during the past six years it is seen that although over 40% of them harbour Theileria mutans without undergoing any systematic disturbance they are, as a class free from Babesia bigemina, which is rather common in local cattle. Out of 1317 blood smears from buffaloes alone examined during the year Theileria mutans was found in 566 or in about 43%. Babesia bigemina in 48 blood smears of cattle, Babesia motasi in 67 of sheep and Nuttalia equi in one smear of a horse were also recorded. Babesia motasi, Wenyon (1926) were encountered and recorded, perhaps, for the first time in India in some sheep under Goat Virus experiments. This formed the subject of a paper by Messrs. S.D. Achar and G.N. Srikantiah, published in the Indian Veterinary Journal, Volume 10, No. 4, Madras. The parasites appeared in the blood of sheep during the period of febrile reaction by the injection of Goat Rinderpest Virus and persisted in the blood for about 13 days. Transmission experiments were tried by injecting the blood from affected sheep, containing large numbers of parasites to healthy sheep, goats, cow, calf, rabbits, and buffalo calves. Except the sheep no other animal showed the parasites. Sheep kept in close contact with affected ones also showed the presence of the parasites on the 9th day. Three apparently healthy sheep purchased at random and kept under observation in an insulated place also revealed the presence of the parasites on a routine examination of blood. This suggests that sheep in this area commonly

harbour the parasites although their presence in the blood is not ordinarily associated with any clinical symptoms.

The invertebrate intermediate host in these cases has been identified to be Haemaphysalis spinosa whereas Babesia motasi is said to be transmitted by the tick Rhipicephalus bursa by motas (1923) in Transval.

## HELMINTHOLOGICAL NOTES.

As has been mentioned elsewhere in this report a systematic post mortem examination was conducted on every animal that died in the Institute, in the course of which an attempt was also made to collect and classify the parasites encountered, with a view to make a rough study of the probable incidence of parasitic affection among the different kinds of animals that are received mostly from different parts of the State. Thus, of the cases on which autopsy was held, parasites were encountered and collected from about 22.8% of the total number.

The parasites collected have been classified as detailed below:-

| Name of Parasite | HORSES. | Location. |
|---|---|---|
| Bots | ... | Stomach. |
| **NEMATODES.** | | |
| Habronema microstoma | | Stomach. |
| Habronema megastoma. | | |
| Oxyuris equi | | Intestines. |
| Ascaris equorum | | |
| Strongylus equinus. | | |

## BUFFALOES.

TREMATODES

Fasciola gigantica - Liver (bile ducts) and gall bladder.

p.t.o

4R

Name of Parasite. Location

~~PARAMPHISTOMUM EXPLANATUM:-~~

Paramphistomum explanatum.—

Rumen, bile ducts, gall bladder and some times even in the intestines.

CESTODES:-

Moniezia alba - Intestines.

NEMATODES:-

| | |
|---|---|
| Dictyocaulus viviparus ... | Lungs |
| Setaria labiata-papillosa . | Peritonial cavity. |

GOATS.

Larvae of Oestrus ovis ... ~~Lungs and~~ Nasal chambers.

TREMATODES:-

| | |
|---|---|
| Paramphistomum Cervi ... | Rumen. |

NEMATODES:-

| | |
|---|---|
| Trichuris ovis<br>Oesophagostomum columbianum<br>Oesophagostomum venulosum. | Intestines |

CESTODES

| | |
|---|---|
| Cysticercus tenuicollis ... | Peritoneum, lungs & liver. |
| Moniezia ~~expansa~~ Alba<br>Avitellina centripunctata.<br>Moniezia planissima<br>Moniezia expansa<br>Stilesia globipunctata. | Intestines. |

SHEEP.

TREMATODES:-

| | |
|---|---|
| Paramphistomum cervi .. | Rumen. |

| Name of Parasites. | | Location. |
|---|---|---|
| **Nematodes:-** | | |
| | Haemonchus contortus - | Abomasum. |
| **Cestodes** | | |
| | Moniezia expansa - | Intestines. |

**FOWLS.**

| | | |
|---|---|---|
| **Nematodes:-** | | |
| | Heterakis gallinae - | Caecum. |
| | Ascaridia perspicillum | Intestines. |
| **Cestodes:-** | | |
| | Davainea echinobothrida<br>Davainea tetragona<br>Choanotaenia infundibulum | Intestines. |

**WHITE RATS.**

| | | |
|---|---|---|
| **Nematodes:-** | | |
| | Trichosomoides crassicauda | Bladder. |

**REVENUE & EXPENDITURE.**

The total sales of the biological products toplaces outside the State as wellas to the Mysore Civil Veterinary Department and also of "Dono",ani als and manure within the State come up to Rs. 1,27,299/- during the year under report as against Rs. 1,77,705/- during 1932-33, the total sales effected to places outside the State alone being Rs. 49,646/- as against Rs. 58,751/- in the previous year. The decrease in the total Revenue as compared with that of the last year is attributable mainly to the considerable reduction in the prices of the products (given effect to from 1-4-1933) as already explained under introduction.

It may also be noticed in this connection that there is a corresponding reduction in expenditure as well during the year under report. Out of the total budget grant of Rs. 1,00,300/- for the Institute for expenditure during the year 1933-34, a sum

of only Rs. 83,407/2/2 is actually spent (saving thereby Rs. 16,892-14-10) as against Rs. 92,173/- expended last year out of the total budget grant of Rs. 1,03,700/-

Thus it would seem that the Institute has worked during the year under report at a considerable profit and it may also be said that the working of the Institute from a financial point of view is as good as, if not better than last year's in spite of certain unfavourable factors such as, the reduction in prices, the control on indents by the Mysore Civil Veterinary Department etc., as detailed in the introduction above.

GENERAL.

As in previous years Mr. K. Ranganatha Rao, Assistant Superintendent, Scientific Section, Mysore Civil Veterinary Department was afforded in this Institute all facilities to continue his research work on Johne's disease, some parasitic and other diseases and to carry on the routine laboratory work of Mysore Civil Veterinary Department.

Exhibitions- As usual the biological products prepared in this Institute together with some interesting demonstration photographs were arranged to be exhibited in the last Dasara Exhibition, held at Mysore in the months of September and October 1933, deputing one of the Veterinary Inspectors of the Institute to be in charge of the exhibits and the Exhibition Committee was pleased to award a Gold Medal Certificate in appreciation of the exhibits of this Institute.

Mysore Veterinary Medical Association:-

As desired by the Director of Agriculture in Mysore, the Sixth Annual Conference of the Association was held in this Institute in the month of May 1934 in order to afford an opportunity to all those that assembled for

the Conference to ~~exquaint~~ acquaint themselves with the Scientific activities of the Institute. Accordingly, some interesting demonstrations were arranged for on that occasion and all the members were shown round the different sections and explained the d etails of preparations and use of the various biological products prepared in this Institute. It may also be mentioned here that three papers were presented before the Conference by the members of the staff of this Institute.

Publications:- The papers detailed below were submitted for publication by members of the staff during the year:-

MR. S.D. ACHAR.

" A brief note on some investigational experiments with Goat Adapted Virus" (Read at the Sixth Annual Session of the Mysore Veterinary Medical Association of 1934).

MR. P. U. NAYAR.

" Anti-genetic value of Spleen Vaccine against Rinderpest". (Read at the Sixth Annual Session of the Mysore Veterinary Medical Association 1934).

MESSRS. S.D. ACHAR & G.N. SRIKANTIAH.

A note on Babesia motasi Wenyon (1926) in sheep in Mysore. ( Indian Veterinary Journal Volume 9, No. IV).

MR. G.N. SRIKANTIAH.

" A note on Fowl Cholera and the antigentic value of the Vaccine" (Read at the Sixth Annual Session of the Mysore Veterinary Medical Association, 1934).

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52

**Education:-** During the year under report Mr. V.S. Kuppuswamy Modaliar, Veterinary Inspector of this Institute, underwent a post graduate course in the Imperial Institute of Veterinary Research, Muktesar.

As regards the " Short Course" training given in this Institute to the Veterinary Graduates, it is seen from the applications received that a large number of graduates are anxious to undergo training . However, the admission was restricted to one at a time and only the following candidates were selected for the training during the year.

1. Mr. A.H. Pothnis, L.V.P (from Mysore)
2. " C.E. Lewis, G.B.V.C., ( from Ceylon)
3. " M. Poornabodha Rao, G.M.V.C. (Madras)
4. " Nadgir, L.V.P. (Mysore).

Mr. Satyanarayana Singh, M.Sc., from Hyderabad, a scholar in Aligarh University, worked in the Institute for a period of about a month in connection with Collection and identification of nematodes in local chameleons and other reptiles.

**Visitors:-** It may not be out of place to mention here that on account of the importance and usefulness of the Institute, as a place of Scientific and general interest it has been attracting several distinguished visitors both official and non-official from within as well as from outside the State. The following were some of the visitors during the year under report.

The Institute was visited by Maharaja Sir Kishen Prasad, Prime Minister of Hyderabad, together with his Suite on 29/5/34 . They were all shown round the different sections of the Institute when they evinced

great interest in the working of the Institute.

Amin-ul-Mulk Sir Mirza Muhammed Ismail, Kt., C.I.E., O.

During the year under report the Dewan of Mysore, was pleased to visit this Institute and to go round all the sections. He suggested several improvements which are being carried out.

Mr. S.P. Rajagopalachari, Second Member in Council was also pleased to pay a visit to this Institute on 4th March 1934.

The following were some of the other visitors during the year under report:-

1. Private Secretary to H.E.H. the Nizam of Hyderabad.
2. Mr. Hung Chan Chung, M.A., Rockfeller Foundation, Fellow Yen Ching University, Peiking, China.
3. Mr. Razvi, Hyderabad.
4. Mr. Humayun Mirza, Personal Assistant to the Dewan of Mysore.
5. Mr. S. Rangaswamy Iyengar, Administrative General to the Government of Madras.
6. Mr. GarudaChar, G.B.V.C., Lecturer, Bombay Veterinary College.
7. Mr. M.R.A. Panickar, M.R.C.V.S. | Madras Veterinary College.
8. Mr. M.S. Nathan, G.M.V.C., and post graduate student. |
9. Students of the Bio-chemical Department of the Indian Institute of Science, Bangalore.
10. Students of the Agricultural School, Ramakrishnapur.
11. Mr. K. S. Krishnaswamy Iyengar, Advocate, Madras.
12. Mr. S. Gopalaswamy Iyengar, Madras.
13. Rao Bhadur O.Q.O.K.L. Lgtchmanan Chettiar.
14. "K. Gopalaswamy Iyengar, Madras.
15. Mr. S.K. Saminathan Chettiar, Banker, Attangudi, Ramnad District.
16. " K.S. Rajagopala Iyengar, Advocate, Madras.

## ACKNOWLEDGMENTS.

I take this opportunity to thank all those that co-operate d in the work of this Institute during the year under report. However, I wish to make a special mention of some of the officers who have already helped in the work of this Institute. I am indeed highly grateful to xxx Lt. A.F. Monteiro I/c Stock Camps at Hyderabad, for having afforded us all facilities to conduct goat virus experiments on animals cattle and also to Mr. K.Krishnaiengar, Superintendent, Civil Veterinary Department, and his executive staff for having co-operated with us in all occasions in field experiments. My thanks are due to Mr. P.Ranganatha Rao, Assistant superintendent, Serological section, for his ready co-operation and assistance in the laboratory work of this Institute. I am much obliged to Mr.C.Narasinga Rajah, Farm Manager, Cattle Breeding Station, for having provided us with all facilities to conduct blood water experiments on the farm and am equally obliged to the Entomologist in having helped us in identifying ticks The Mycologist and the Senior Artist of the Agricultural Department are also to be thanked very much in having arranged for taking photographs of the scientific operations in the Institute, and My thanks are due to no less extent to the Public Works and Water works Departments and also to the Agricultural Engineer for their Co-operation in attending to the repairs and alterations of the Institute buildings etc. I am grateful to the Economic Botanist also for his ever-ready and cordial co-operation in improving the garden on the Institute premises and in raising Fora Crops

on the Institute grounds. I wish to thank the Veterinary Inspectors of Doddaballapur, Devanhalli, Goribidanur and Gubbi for having tried the Black Quarter Bacterin and reported the results and also the Veterinary Inspector, Mysore for having tried Foot & Cholera Vaccine (our new preparation) in the field and reporting the results. The Veterinary Inspectors of Tiptur, Mysore, Chamarajnagar are also to be thanked for having sent some specimens of muscles from the animals affected with Blackquarter.

I feel I will be failing in my duty if I do not express my deep gratitude to the Director, Indian Imperial Institute of Veterinary Research, Muktesar, and to the Principal, Madras Veterinary College, for having kindly sent certain cultures to this Institute I heartily thank Mr. M.Ananthanarayana Rao of Madras Veterinary College for his kind help in our publication. The following officers are also to be thanked very much for having kindly arranged to send the annual reports of their departments in exchange for the report of this Institute.

1. The Director of Veterinary Services, Tanganyika Territory.
2. Chief Veterinary Officer, Colony and Protectorate of Nigeria
3. Director, Imperial Institute of Veterinary Research, Muktesar.
4. Director of Agriculture in Mysore.
5. Director of Veterinary Research, Veterinary Research Station, Glenfield, New South Wales, Australia.

In concluding the report I am glad to place on record my deep appreciation of the good work done

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during the year under report by Dr. P. U. Mayar, Bacteriological Assistant and the whole of the staff both executive and ministerial for their loyalty and cooperation in the discharge of their duties during the year although they had of on to work overtime in order to cope with an increasingly heavy work in the Institute.

Superintendent,
Haffkine Institute.

Appendix I

...T F... ...T S...ING TH ...UANTITY ... M... ...ERCENT VIRU... ...R... ...D,I... ... ... 

APPENDIX II

## ...F THE QUANTITY ... VIRUS ... ISSUED, ... DURING THE YEAR 1933-34.

| Month | | | Balance at the beginning of the month. | Quantity produced during the month. | Total | Quantity supplied to Civil veterinary department. | Quantity supplied to Outside the State. | Quantity used in the Institute including wastage etc. | Total | Stock of Goat Virus on the last day of the month. |
|---|---|---|---|---|---|---|---|---|---|---|
| July | ... | 1933 | c.c. 500 | c.c. 1,900 | c.c. 2,400 | c.c. - | c.c. - | c.c. 1,925 | c.c. 1,975 | c.c. 425 |
| August | ... | " | 425 | 2,175 | 2,600 | - | - | 1,900 | 1,900 | 700 |
| September | ... | " | 700 | 1,600 | 2,300 | 50 Mysore Dasara Exhibition. | - | 1,225 | 1,275 | 1,025 |
| October | ... | " | 1,025 | 1,575 | 2,600 | - | - | 1,950 | 1,950 | 650 |
| November | ... | " | 650 | 1,175 | 2,425 | 25 | - | 1,525 | 1,550 | 875 |
| December | ... | " | 875 | 2,868 | 3,743 | 255 | - | 2,278 | 2,533 | 1,210 |
| January | ... | 1934 | 1,210 | 3,360 | 4,570 | 915 | - | 2,850 | 3,765 | 805 |
| February | ... | " | 805 | 2,235 | 3,040 | 660 | - | 1,450 | 2,110 | 930 |
| March | ... | " | 930 | 2,940 | 3,870 | 630 | - | 2,760 | 3,390 | 480 |
| April | ... | " | 480 | 3,060 | 3,540 | 1200 | - | 840 | 2,130 | 1,410 |
| May | ... | " | 1,410 | 3,253 | 4,665 | 465 | - | 3,780 | 4,245 | 420 |
| June | ... | " | 420 | 2,985 | 3,405 | 480 | - | 2,250 | 2,700 | 705 |
| | | | Total 500 | 29,728 | 30,228 | 4600 | 24,783 | | 23,523 | 705 |

50 Mysore Exhibition

SUPERINTENDENT,
... INSTITUTE.

Appendix III

...OF ... SHOWING THE QUANTITY OF ANTI RINDERPEST S.RUM PRODUCED, SUPPLIED ... DURING MONTHLY FOR THE YEAR 1933-34.

| Month | | Balance at the beginning of the month. | Quantity produced during the month. | Quantity returned from the Civil Veterinary Department. | Total | Quantity supplied to | | Quantity of Serum used in the Institute in cluding wastage etc. | Total | Stock of Serum on the last day of the month. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Civil veterinary Department. | Outside the State. | | | |
| | | Doses | Doses | Doses | Doses | Doses | Doses | Doses | Doses | Doses. |
| ly | 1933 | 2,02,000 | 62,770 | 2,450 | 2,67,220 | 91,200 | 4,000 | 70 | 95,270 | 1,71,950 |
| gust | " | 1,71,950 | 26,700 | - | 1,98,650 | 11,000 | 23,000 | 850 | 34,850 | 1,63,800 |
| ptember | " | 1,63,800 | - | - | 1,63,800 | 6,000 | 23,000 | - | 29,000 | 1,34,800 |
| tober | " | 1,34,800 | 40,100 | - | 1,74,900 | - | 28,000 | 650 | 28,650 | 1,46,250 |
| vember | " | 1,46,250 | - | - | 1,46,250 | 2,000 | 38,000 | 3,000 | 43,000 | 1,03,250 |
| cember | " | 1,03,250 | 1,15,300 | - | 2,18,550 | 10,000 | 13,000 | 3,230 | 26,230 | 1,92,320 |
| nuary | 1934 | 1,92,320 | - | - | 1,92,320 | 8,000 | 23,000 | - | 31,000 | 1,61,320 |
| bruary | " | 1,61,320 | - | - | 1,61,320 | 10,000 | 5,000 | - | 15,000 | 1,46,320 |
| rch | " | 1,46,320 | - | - | 1,46,320 | 16,500 | 13,000 | - | 29,500 | 1,16,820 |
| ril | " | 1,16,820 | - | - | 1,16,820 | 16,200 | 10,000 | - | 26,200 | 90,620 |
| y | " | 90,620 | - | - | 90,620 | - | 13,000 | 250 | 13,250 | 77,370 |
| ne | " | 77,370 | 85,450 | - | 1,62,820 | - | 20,000 | - | 20,000 | 1,42,820 |
| | Total | 2,02,000 | 3,30, 320 | 2,450 | 5,34,770 | 1,70,900 | 2,13,000 | 8,050 | 3,91,950 | ~~1,42,820~~ |

SUPERINTENDENT,
SERUM INSTITUTE.

STATEMENT SHOWING THE QUANTITY OF ANTI-RINDERPEST GOAT VIRUS PREPARED, ISSUED, USED IN THE INSTITUTE ETC. DURING THE YEAR 1933-34.

| Month | | | Balance at the beginning of the month. | Quantity produced during the month. | Total | Quantity supplied to Civil veterinary department. | Quantity supplied to Outside the State. | Quantity used in the Institute including wastage etc. | Total | Stock of Goat Virus on the last day of the month. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | c.c. | c.c. | c.c. | c.c. | c.c. | c.c. | c.c. | c.c. |
| July | ... | 1933 | 500 | 1,900 | 2,400 | - | - | 1,925 | 1,975 | 425 |
| August | ... | " | 425 | 2,175 | 2,600 | - | - | 1,900 | 1,900 | 700 |
| September | ... | " | 700 | 1,600 | 2,300 | 50 Mysore Dussara Exhibition. | | 1,225 | 1,275 | 1,025 |
| October | ... | " | 1,025 | 1,875 | 2,600 | - | - | 1,950 | 1,950 | 650 |
| November | ... | " | 650 | 1,175 | 2,425 | 25 | - | 1,525 | 1,550 | 875 |
| December | ... | " | 875 | 2,868 | 3,743 | 255 | - | 2,278 | 2,533 | 1,210 |
| January | ... | 1934 | 1,210 | 3,360 | 4,570 | 915 | - | 2,850 | 3,765 | 805 |
| February | ... | " | 805 | 2,235 | 3,040 | 660 | - | 1,450 | 2,110 | 930 |
| March | ... | " | 930 | 2,940 | 3,870 | 630 | - | 2,760 | 3,390 | 480 |
| April | ... | " | 480 | 3,060 | 3,540 | 1250 | - | 840 | 2,130 | 1,410 |
| May | ... | " | 1,410 | 3,255 | 4,665 | 465 | - | 3,780 | 4,245 | 420 |
| June | ... | " | 420 | 2,985 | 3,405 | 450 | - | 2,250 | 2,700 | 705 |
| | | Total | 500 | 29,728 | 30,228 | 4690 | | 24,783 | 29,523 | 705. |
| | | | | | | 50 Mysore Exhibition | | | | |

SUPERINTENDENT,
GOVT. INSTITUTE.

(Appendix IV

STATEMENT SHOWING THE QUANTITY OF ANTI HAEMORRHAGIC SEPTICAEMIA SERUM PRODUCED, ISSUED, AND BALANCE REMAINING MONTHLY DURING THE YEAR 1933-34.

| Month | | Balance at the beginning of the month. | Quantity produced during the month. | Quantity returned from the Civil Veterinary Department. | Total | Quantity supplied to Civil Veterinary Department. | Quantity supplied to Outside the State. | Quantity of Serum used in the Institute including wastage etc. | Total Serum on the last day of the month | Stock of Serum on the last day of the month |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Doses | doses | doses | doses | doses | doses | doses | doses | doses |
| July ... | 1933 | 8,543 | 2,508 | 680 | 11,731 | 1,540 | 7,500 | 471 | 9,511 | 2,220 |
| August ... | " | 2,220 | 8,483 1/3 | - | 10,703 1/3 | 4,100 | 2,500 | 283 1/3 | 6883 1/3 | 3,820 |
| September .. | " | 3,820 | 18,520 | - | 22,340 | 6,700 | 14,400 | - | 21,000 | 1,240 |
| October ... | " | 1,240 | 13,440 | - | 14,680 | 3,420 | 40 | 200 | 3,660 | 11,020 |
| November .. | " | 11,020 | 3,920 | - | 14,940 | 2,520 | 5,000 | - | 7,520 | 7,420 |
| December .. | " | 7,420 | 4,120 | - | 11,540 | 700 | 5,000 | 400 | 6,100 | 5,440 |
| January .. | 1934 | 5,440 | 11,200 | - | 16,640 | 940 | - | 80 | 1,020 | 15,620 |
| February .. | " | 15,620 | 15,860 | - | 31,480 | 1,500 | 2,000 | - | 3,500 | 27,980 |
| March ... | " | 27,980 | 10,040 | - | 38,020 | 1,000 | - | 20 | 1,020 | 37,000 |
| April ... | " | 37,000 | 13,080 | - | 50,080 | 1,200 | 2,000 | - | 3,200 | 46,880 |
| May ... | " | 46,880 | 5,520 | - | 52,400 | 1,500 | 3,000 | - | 4,500 | 47,900 |
| June ... | " | 47,900 | - | - | 47,900 | 1,460 | - | - | 1,460 (15 cc a dose). | 46,440 |
| | Total | 8,543 | 1,06,691 1/3 | 680 | 1,15,914 1/3 | 26,580 | 41,440 | 1,454 1/3 | 69,474 1/3 | 46,440 |

SUPERINTENDENT,
SERUM INSTITUTE.

APPENDIX V.

STATEMENT SHOWING THE QUANTITY OF ANTI BLACK QUARTER SERUM PRODUCED, ISSUED AND BALANCE REMAINING MONTHLY FOR THE YEAR 1933-34.

| Month | | Balance at the beginning of the month. | Quantity produced during the month. | Quantity returned from Civil Veterinary Department. | Total | Quantity supplied to | | Quantity of Serum used in the Institute including wastage. | Total | Stock on hand on the last day of the month. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Civil Veterinary Department. | Out-side the State. | | | |
| | | DOSES | DOSES | DOSES | DOSES | DOSES | DOSES | DOSES | DOSES | DOSES |
| July ... | 1933 | 7,418 2/3 | - | 2,418 | 9,836 2/3 | 4,820 | 5,000 | - | 9,820 | 16 2/3 |
| August ... | " | 16 2/3 | 4,614 | 120 | 4,750 2/3 | 440 | - | 14 | 454 | 4,296 2/3 |
| September | " | 4,296 2/3 | 18,200 | - | 22,496 2/3 | 3,300 | 7,000 | 100 used at Ajjampur by the Veterinary officer of the Institute. | 10,400 | 12,096 2/3 |
| October | " | 12,096 2/3 | 11,740 | - | 23,836 2/3 | 2,260 | 60 | - | 2,320 | 21,516 2/3 |
| November | " | 21,516 2/3 | 31,400 | - | 52,916 2/3 | - | - | - | - | 52,916 2/3 |
| December | " | 52,916 2/3 | - | - | 52,916 2/3 | 360 | 1,500 | - | 1,860 | 51,056 2/3 |
| January | 1934 | 51,056 2/3 | - | - | 51,056 2/3 | 60 | - | - | 60 | 50,976 2/3 |
| February | " | 50,976 2/3 | - | - | 50,976 2/3 | 820 | 3,000 | - | 3,820 | 47,156 2/3 |
| March | " | 47,156 2/3 | - | - | 47,156 2/3 | 500 | - | - | 500 | 46,656 2/3 |
| April | " | 46,656 2/3 | - | - | 46,656 2/3 | 1,120 | 2,200 | 16 2/3 | 3,336 2/3 | 43,320 |
| May | " | 43,320 | - | - | 43,320 | 760 | 2,000 | - | 2,760 | 40,560 |
| June | " | 40,560 | - | - | 40,560 | 1,700 | 500 | - | 2,200 | 38,360 at 15 cc. a dose. |
| | Total | 7,418 2/3 | 66,954 | 2,538 | 75,910 2/3 | 16,160 | 21,260 | +100 30/3 at Ajjam pur by the Voty. office s of the Institute | 37,850 2/3 | 38,360 doses. |

ASSISTANT SECRETARY TO GOVERNMENT

Appendix VI

## [illegible] AND LOSS IN CC OF ANTI ANTHRAX SERUM PRODUCED, ISSUED, AND BALANCE REMAINING MONTHLY DURING THE YEAR 1933-34.

Accounts.

| Month | | Balance at the beginning of the month. | Quantity produced during the month. | Total | Quantity supplied to | | Quantity of Serum used in the Institute including wastage etc. | Total | Stock of Serum on the last day of the month. |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Civil Veterinary Department. | Outside the State. | | | |
| | | DOSES | DOSES | DOSES | DOSES | DOSES | DOSES | DOSES | DOSES. |
| July ... | 1933 | 17,502 | 3,700 | 21,202 | - | 1,120 | - | 1,120 | 20,082 |
| August ... | " | 20,082 | - | 20,082 | - | 80 | - | 80 | 20,002 |
| September | " | 20,002 | 4,140 | 24,142 | - | - | - | - | 24,142 |
| October | " | 24,142 | - | 24,142 | - | - | - | - | 24,142 |
| November | " | 24,142 | 22,960 | 47,102 | - | 1,000 | - | 1,000 | 46,102 |
| December | " | 46,102 | - | 46,102 | - | - | 20 | 20 | 46,082 |
| January | 1934 | 46,082 | - | 46,082 | - | - | - | - | 46,082 |
| February | " | 46,082 | - | 46,082 | - | - | - | - | 46,082 |
| March | " | 46,082 | - | 46,082 | - | - | - | - | 46,082 |
| April | " | 46,082 | - | 46,082 | - | - | 20 | 20 | 46,062 |
| May | " | 46,082 | - | 46,082 | - | - | 20 | 20 | 46,062 |
| June | " | 46,062 | - | 46,062 | - | - | - | - at 15 c.c. a dose. | 46,062 |
| | Total | 17,502 | 30,800 | 48,302 | - | 2,200 | 40 | 2,240 | 46,062 |

Superintendent,
Serum Institute.

APPENDIX VII.

STATEMENT SHOWING THE QUANTITY OF HAEMORRHAGIC SEPTICAEMIA VACCINE PREPARED, ISSUED AND REMAINING MONTHLY FOR THE YEAR 1933-34.

| Month | | Balance at the beginning of the month. | Quantity produced during the month. | Quantity returned from the Civil Veterinary Department. | Total | Quantity supplied to | | Quantity of Vaccine used in the Institute including wastage etc. | Total | Stock of Vaccine on the last day of the month. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Civil Veterinary Department. | Outside the State. | | | |
| | | DOSES | DOSES | DOSES | DOSES | DOSES | DOSES | DOSES | DOSES | DOSES. |
| July | 1933 | 2,500 | 8,250 | 600 | 11,350 | 4,950 | 1,500 | - | 6,450 | 4,900 |
| August | " | 4,900 | 4,350 | - | 9,250 | 4,300 | 4,500 | - | 8,800 | 450 |
| September | " | 450 | 19,450 | - | 19,900 | 14,950 | 4,000 | 300 | 19,250 | 650 |
| October | " | 650 | 10,800 | - | 11,450 | 4,100 | 1,000 | - | 5,100 | 6,350 |
| November | " | 6,350 | 8,200 | - | 14,550 | 3,450 | - | - | 3,450 | 11,100 |
| December | " | 11,100 | - | - | 11,100 | 900 | 500 | - | 1,400 | 9,700 |
| January | 1934 | 9,700 | - | - | 9,700 | 1,800 | 1,000 | - | 2,800 | 6,900 |
| February | " | 6,900 | 1,200 | - | 8,100 | 3,500 | 2,000 | - | 5,500 | 2,600 |
| March | " | 2,600 | - | - | 2,600 | 800 | - | - | 800 | 1,800 |
| April | " | 1,800 | 11,550 | - | 13,350 | 350 | 2,000 | - | 2,350 | 11,000 |
| May | " | 11,000 | - | - | 11,000 | 1,250 | 2,000 | - | 3,250 | 7,750 |
| June | " | 7,750 | - | - | 7,750 | 900 | 2,000 | - | 2,900 | 4,850 at 5 cc. a dose. |
| | Total | 2,500 | 63,800 | 600 | 66,900 | 41,250 | 20,000 | 300 | 62,050 | 4850 |

Superintendent,
Serum Institute.

APPENDIX VII/

STATEMENT SHOWING THE QUANTITY OF BLACK QUARTER VACCINE PRODUCED AND DISPOSED OF DURING THE YEAR ENDING 31st MARCH 1934.

1933-34.

| Month | | Balance at the beginning of the month. | Quantity produced during the month. | Quantity returned from the Civil Veterinary Department. | Total | Quantity supplied to Civil Veterinary Department. | Quantity supplied to Outside the State. | Quantity of filtrate used in the Institute including wastage etc. | Total | Stock of filtrate on the last day of the month. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | DOSES | DOSES | DOSES | DOSES | DOSES | DOSES | DOSES | DOSES | DOSES |
| July | 1933 | 400 | 43,700 | 2,150 | 46,300 | 30,600 | 3,500 | For inoculating animals at 50 Lancers by the Veterinary Inspector of the Institute. 550 for injection. | 40,900 | 5,400 |
| August | " | 5,650 | 18,050 | - | 23,450 | 12,400 | 6,000 | 100 -do- | 18,500 | 4,950 |
| September | " | 4,950 | 22,400 | - | 27,350 | 19,800 | 2,000 | 750 used at Ajjampur by the Veterinary officers of the Institute. | 22,550 | 4,800 |
| October | " | 4,800 | 21,400 | - | 26,200 | 15,300 | 1,000 | - | 16,300 | 9,900 |
| November | " | 9,300 | 6,950 | - | 16,250 | 6,400 | - | - | 6,400 | 8,850 |
| December | " | 8,850 | 9,750 | - | 18,600 | 2,250 | 1,000 | - | 3,250 | 15,350 |
| January | 1934 | 15,350 | - | - | 15,350 | 4,650 | - | - | 4,650 | 10,700 |
| February | " | 10,700 | - | - | 10,700 | 3,700 | 1,000 | 550used at Ajjampur by the Veterinary officers of the Institute. | 5,250 | 5,450 |
| March | " | 5,450 | 7,800 | - | 13,250 | 6,350 | - | - | 6,350 | 6,900 |
| April | " | 6,900 | 5,950 | - | 12,850 | 4,850 | 1,000 | - | 6,050 | 6,800 |
| May | " | 6,800 | 6,300 | - | 13,100 | 9,650 | 1,000 | - | 10,650 | 2,450 |
| June | " | 2,450 | 16,600 | - | 19,050 | 16,250 | 500 | - | 6,750 | 2,300 |
| Total. | | 400 | 1,58,950 | 2,150 | 1,62,500 | 1,37,400 | 17,500 | 3,000 | 1,57,250 | 2,300 |

(1)

APPENDIX ~~XXXX~~ IX

[illegible] QUANTITY OF DOCTRIN [illegible] AND DISPOSAL THEREOF DURING [illegible] 1933-34.

| Month. | | Balance at the beginning of the month. | Quantity produced during the month. | Total | Quantity supplied to | | Quantity of serum used in the institute. | Total stock of doctorin on the last day of the month. |
|---|---|---|---|---|---|---|---|---|
| | | | | | Civil Veterinary Department. | Outside the State. | | |
| | | DOSES | DOSES | DOSES | DOSES | DOSES | DOSES | DOSES. |
| July .. | 1933 | - | - | - | - | - | - | - |
| August | " | - | - | - | - | - | - | - |
| September | " | - | 550 | 550 | 500 | - | 200 | 350 |
| October | " | 350 | 3,450 | 3,800 | - | - | - | 3,800 |
| November | " | 3,800 | - | 3,800 | 200 | - | 200 | 3,600 |
| December | " | 3,600 | - | 3,600 | - | - | - | 3,600 |
| January | 1934 | 3,600 | - | 3,600 | - | - | - | 3,600 |
| February | " | 3,600 | - | 3,600 | - | - | - | 3,600 |
| March | " | 3,600 | 1,200 | 4,800 | - | - | - | 4,800 |
| April | " | 4,800 | | 4,800 | 400 | | 400 | 4,400 |
| May | " | 4,400 | | 4,400 | 400 | | 400 | 4,000 |
| June | " | 4,000 | | 4,000 | | | | 4,000 @ std. a dose. |
| | Total | - | 5,200 | 5,200 | 1,200 | - | 1,200 | |

Sd/- [illegible]
SUPERINTENDENT,
[illegible] INSTITUTE.

APPENDIX K.

STATEMENT SHOWING THE QUANTITY OF SMALL-POX VACCINE [illegible] AND BY WHOM DURING THE MONTHS OF THE YEAR 1933-34.

| Month | | Balance at the beginning of the month. | Quantity produced during the month. | Total | Quantity supplied to: Civil Veterinary Department. | Quantity supplied to: Outside the State. | Quantity of Vaccine used in the Institute including wastage etc. | Total | Stock of Vaccine on the last day of the month. |
|---|---|---|---|---|---|---|---|---|---|
| | | c.c. | c.c. | c.c. | c.c. | c.c. | c.c. | c.c. | c.c. |
| July ... | 1933 | 15.795 (Conc) | - | 15.795 (Conc) | 6 (Conc) | - | - | 6 (Conc) | 9.795 (Conc) |
| August ... | " | 9.795 (Conc) | 40.00 | 49.795 (Conc) | 2 (Conc) | - | - | 2 (Conc) | 47.795 (Conc) |
| September | " | 47.795 (Conc) | - | 47.795 (Conc) | - | - | - | - | 47.795 (Conc) |
| October ... | " | 47.795 (Conc) | - | 47.795 (Conc) | 2 (Conc) | - | 0.25 (Conc) | 2.250 (Conc) | 45.545 (Conc) |
| November | " | 45.545 (Conc) | - | 45.545 (Conc) | - | - | - | - | 45.545 (Conc) |
| December | " | 45.545 (Conc) | - | 45.545 (Conc) | 15 (Conc) | - | - | 15.000 (Conc) | 30.545 (Conc) |
| January ... | 1934 | 30.545 (Conc) | - | 30.545 (Conc) | - | - | - | - | 30.545 (Conc) |
| February ... | " | 30.545 (Conc) | - | 30.545 (Conc) | 10.000 (Conc) | - | 0.250 (Conc) | 10.250 (Conc) | 20.295 (Conc) |
| March ... | " | 20.295 (Conc) | - | 20.295 (Conc) | 11.00 (Conc) | - | 0.250 (Conc) | 11.250 (Conc) | 9.045 (Conc) |
| April ... | " | 9.045 (Conc) | - | 9.045 (Conc) | 6 (Conc) | - | - | 6.00 (Conc) | 3.045 (Conc) |
| May ... | " | 3.045 (Conc) | 20.000 (Conc) | 23.045 (Conc) | 15.500 (Conc) | - | 1.545 (Conc) | 17.045 (Conc) | 6.000 (Conc) |
| June ... | " | 6.000 (Conc) | 32.000 (Conc) | 38.000 (Conc) | - | - | - | - | 38.000 (Conc) |
| | Total | 15.795 c.c. (Conc) | 92.000 c.c. Conc. | 107.795 c.c. Conc. | 67.500 c.c. (Concentrated) | - | 2.295 c.c. Conc. | 63.795 c.c. Conc. | |

APPENDIX XIX.

STATEMENT SHOWING THE QUANTITY OF SERUM AND OTHER PRODUCTS MANUFACTURED, SOLD AND BALANCES REMAINING DURING THE YEAR 1933-34.

| Name of products | Opening balance. | Quantity produced | Quantity returned | Total | Quantity supplied to: Civil Veterinary Department. | Quantity supplied to: Outside the State. | Quantity used in the Institute including wastage etc. | Total | Stock on hand on 1st July 1934. |
|---|---|---|---|---|---|---|---|---|---|
| | DOSES | DOSES | DOSES | DOSES | DOSES | DOSES | DOSES | DOSES | DOSES |
| 1. Anti Rinderpest Serum | 2,02,000 | 3,30,320 | 2,450 | 5,34,770 | 1,70,900 | 2,13,000 | 8,050 | 3,91,950 | 1,42,820 |
| 2. Anti Haemorrhagic Septicaemia Serum. | 8,543 | 1,06,6⅔ | 680 | 1,15,914⅓ | 26,580 | 41,440 | 1,434 1/3 | 69,474 1/3 | 46,440 |
| 3. Anti Black quarter Serum | 7,433 2/3 | 65,954 | 2,538 | 75,910⅔ | 16,160 | 21,280 | 130 2/3 | 37550 2/3 | 38,360 |
| 4. Anti Anthrax Serum | 17,502 | 30,800 | - | 46,302 | - | 2,200 | 40 | 2,240 | 46,062 |
| 5. Haemorrhagic Septicaemia Vaccine. | 2,350 | 63,600 | 600 | 66,900 | 41,250 | 20,500 | 300 | 62,050 | 4,850 |
| 6. Black quarter Filtrate | 400 | 1,50,950 | 2,150 | 1,53,500 | 1,37,400 | 17,600 | 2,000 | 1,57,200 | 2,300 |
| 7. Black-quarter Bacterin | - | 5,200 | - | 5,200 | 1,200 | - | - | 1,200 | 4,000 |
| 8. Sheep-pox Vaccine | 15.705 cc Concentrated | 92,000 cc (Conc) | - | 107.705 cc (Conc) | 67.500 cc (Conc) | - | 2.295 cc (Conc) | 69.795 cc (Conc) | 38.000cc (Conc) |
| 9. Rinderpest Virus (Bull virus) | 201 ozs. or 5026 cc. | 11,747 ozs. or 2,93,675 cc. | - | 11,948 ozs. or 2,98,700 cc. | 3,940 ozs or 98.675 cc | 313 ozs. or 7825 cc | 7646 ozs or 1,91,150 cc. | 11,906 ozs. or 2,97,650 cc. | 42 ozs. or 1050 cc. |
| 10. Rinderpest Virus (Goat Virus) | 800 cc | 29,728 cc. | - | 30,228 cc. | 4690 cc. 450 cc | - | 24,783 cc. | 29,823 cc. | 705 cc. |

SUPERINTENDENT,
SERUM INSTITUTE.

Appendix XII

STATEMENT SHOWING THE PRODUCTS SUPPLIED TO THE DIFFERENT PROVINCES, STATES, ETC., DURING THE YEAR 1933-34.

| Products. | Mysore | Hyderabad | Coorg | Baroda | Kolhapur | Sangli | Ichalkaranji. | Trichur | Pudukkottai | Rishi Valley | Janjira | Lancara |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| | Doses | Doses | Doses | Doses | Doses | Doses | Doses | Doses | Doses | Doses | Doses | Doses |
| Anti Rinderpest Serum. | 1,70,900 | 1,84,000 | 27,000 | 2,000 | | | | | | | | |
| Anti Haemorrhagic Septicaemia Serum. | 26,589 | 38,000 | | | 2,000 | 500 | 40 | 200 | | | | |
| Anti Black-quarter Serum. | 16,160 | 20,500 | | | | | | | 700 | 60 | | |
| Anti Anthrax Serum. | | 2,000 | | | | | | 140 | | | 60 | |
| Haemorrhagic Septicaemia Vaccine. | 41,250 | 16,000 | | 4,500 | | | | | | | | |
| Black-quarter Filtrate. | 1,37,400 | 17,000 | | | | | | | 700 | 100 | | 50 |
| Black quarter Bacterin. | 1,200 | | | | | | | | | | | |
| Sheeppox Vaccine | 67,500 cc. (Conc) | | | | | | | | | | | |
| Rinderpest Bovine Virus. (a) | 98,675 cc - 7,825 cc. | | | | | | | | | | | |
| Rinderpest Goat Virus. | 4,690 cc. plus 50 Dasara Exhibition. | | | | | | | | | | | |

Continuation Sheet.



STATEMENT SHOWING THE PRODUCTS SUPPLIED TO THE DIFFERENT PROVINCES, STATES, ETC., DURING THE YEAR 1933-34.

| | Used at Ajjampur | Used at Institute including wastage etc., | Total. |
|---|---|---|---|
| | Doses | Doses | Doses |
| | 14 | 15 | 16 |
| Anti Rinderpest Serum | - | 8,050 | 3,91,050 |
| Anti Haemorrhagic Septicaemia Serum | - | 1,454 1/3 | 69,476 1/3 |
| Anti Black quarter Serum | 100 | 30 2/3 | 37,550 2/3 |
| Anti Anthrax Serum | - | 40 | 2,240 |
| Haemorrhagic Septicaemia Vaccine | - | 300 | 62,050 |
| Black quarter filtrate | 1,300 | 650 | 1,57,200 |
| Black quarter Bacterin | | | 1, 200 |
| Sheep-pox Vaccine | - | 2.295 cc. (Concentrated) | 69.795 cc. (Concentrated) |
| Rinderpest Bovine Virus. (a) | - | 13,450 cc.<br>1,77,700 cc. (discarded) | 2,97,650 cc. |
| Rinderpest Goat Virus. | - | 335 cc.<br>24,468 cc. (discarded) | 29,523 cc. |

(a) Including 125 cc. used for Goat virus immunity test at Birur.
" 50 cc. taken for Mysore Dasara Exhibition.

Superintendent,
Serum Institute.

S.I. 12/11

Appendix XIII

STATEMENT SHOWING THE FINANCIAL RESULTS OF THE WORKING OF THE SERUM INSTITUTE DURING THE YEAR 1933-34.

| Receipts. | | | Expenditure. | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sale of sera, vaccines and other products including those supplied to the Civil Veterinary Department ~~and the Army Medical Officers, other Indian and Executive Service Officers~~ | Sale of animals, manure etc., | Total | Purchase of animals | Fodding charges | Apparatus chemicals and glassware. | Contingencies. | Salaries and travelling allowance of officers and staff. | Total. |
| | | Rs | Rs | Rs | Rs | Rs | Rs | Rs |
| Rs. 1,23,705- 2- 0 | Rs. 3,593- 14- 0 | 1,27,299 | 18,553 | 11,498-4-0 | 11,940 | 7,309-14-2 | 40,102-15-0 | 83,407-1-2 |

Hebbal, Bangalore.

Superintendent,
Serum Institute.

APPENDIX XIV

Table showing the results of smears examined during 1933-34.

| Disease suspected. | Number of smears | | | Total. |
|---|---|---|---|---|
| | Positive. | Doubtful | Negative. | |
| Anthrax | 64 | - | 4 | 68 |
| Black quarter | 91 | - | 29 | 120 |
| Haemorrhagic Septicaemia | 250 | 15 | 15 | 280 |
| Past aviseptieus. | 67 | 14 | 21 | 102 |
| Babesia Bigenium | 45 | 1 | - | 46 |
| Theileria mutans | 558 | - | 759 | 1317 |
| B. Equi | 1 | - | - | 1 |
| Babesia motasi | 67 | 1 | - | 68 |
| Johne's disease | - | - | 1 | 1 |
| Post mortem smears for B. Anthracis gram. | 561 | - | 498 | 1059 |
| | | | | 3062 |

Director
Veterinary Research Institute.

Appendix XV 72

List of products issued from the Hyderabad Serum Institute, Bangalore, and the current prices as sanctioned by the Government of Mysore.

| Name of product. | Total contents of bottle. | Unit dose. | Cost per unit dose. Rs. | a. | p |
|---|---|---|---|---|---|
| Anti Rinderpest Serum Quality I. | 250 cc. in each standard bottle (or 50 doses) | 5 cc. | 0 | 2 | 0 |
| Anti Rinderpest Serum Quality II. | -do- | 5 cc. | 0 | 1 | 6 |
| Anti Black quarter Serum | 300 cc. (or 30 doses) | 25 cc. | 0 | 4 | 0 |
| Anti Haemorrhagic Septicaemia Serum. | 300 cc. -do- | 15 cc. | 0 | 4 | 0 |
| Anti Anthrax Serum | 300 cc. -do- | 15 cc. | 0 | 4 | 0 |
| Haemorrhagic Septicaemia Vaccine. | 250 cc. (50 doses) | 5 cc. | 0 | 2 | 0 |
| Blackquarter Filtrate | 250 cc. -do- | 25 cc. | 0 | 3 | 6 |
| Blackquarter Bacterin (supplied in one ounce and two ounce bottles) | 250 cc. (or 50 doses) | 5 cc. | 0 | 3 | 6 |
| Rinderpest Virus | 25 cc. (or 25 doses) | 1 cc. | 0 | 1 | 0 |
| Sheep-pox Vaccine (supplied in ampoules). | 100 doses in 1 ampoule | 100 doses | 0 | 6 | 0 |
| Rinderpest Goat Virus (supplied in 1 oz. & 2 oz. bottles) | | 16 cc. | 3 | 8 | 0 |

Prices rates are for cattle. At the Institute, Hebbal, a cost of transport, cases, etc., are also included.

N.B. The minimum quantity of each product that can be supplied at a time is one standard bottle as noted in column 2.

Checked

Appendix F G-

SUBJECT .....

.....

.....

*Diary No. of letter replied to* ..... .....

General and Revenue Secretariat

( )

*the* *193* .

Date of issue 3/1/35

Signed by .....

100 copies to the Govt of Agra
150 Copies to the Govt

List of enclosures .....

Copied by .....

Examined by.....

**Section** C.V

**File No.** 43-34

**Serial No.** 4

No. 10423 Revenue

To

The Superintendent Govt Printing, Bangalore.

Sir,

I am directed to forward, herewith, a copy of the Administration Report of the Mysore Sericulture for the year 1933-34 and to request that the same may be caused to be set up in type and 250 copies ~~printed on the margin~~ thereof printed & kept ready for being bound with the final report thereon which will be sent to you in due course.

Two proof copies may

be kindly sent to [illegible]

Dir Gen Afrs for [illegible]

approval before copies are

struck off.

Thanks &c-

Secy
Dir Gen

Memo no 04230 B/11/35

Copy to the Dir Gen Afrs.

With ref to his letter no Per 50-4c.

321 g 34-35 dated 21/1/34.

B-0

Secy
Dir Gen

C 4234/5

From C W 43-34-4

The Secretary to the Government of His Highness the Maharaja of Mysore,
Development Departt.

To

The Superintendent,
Government Printing, Bangalore.

Sir,

I am directed to forward herewith, a copy of the Administration Report of the Mysore Serum Institute for the year 1933-34 and to request that the same may be caused to be set in type and 250 copies printed and kept ready for being bound with the Government review thereon which will be sent to you in due course.

Two proof copies may be kindly sent direct to the Director of Agriculture for approval before copies are struck off.

I have the honour to be,

Sir,

Your most obedient servant,

Sd. M.Venkatanaranappa

Secretary to Government,
Development Department.

Memo No. C 4240 3/12/35

Copy of the above is forwarded with compliments to the Director of Agriculture in Mysore with reference to ~~your~~ letter No. Per.50-Ho.321 of 34-35 dated 2nd December 1934.

By order,

For Secretary to Government,
Development Department.

75

GOVERNMENT OF HIS HIGHNESS THE MAHARAJA OF MYSOR

General and Revenue Secretariat

No. D 4234/5

Bangalore, Dated 30 Jan 35 193

From CN 43-34-4

The Secretary to the Government of His Highness the Maharaja of Mysore,
Development Department.

To

The Superintendent,

Government Printing, Bangalore.

Sir,

I am directed to forward herewith, a copy of the Administration Report of the Mysore Serum Institute for the year 1933-34 and to request that the same may be caused to be set in type and 250 copies printed and kept ready for being bound with the Government review thereon which will be sent to you in due course.

Two proof copies may be kindly sent direct to the Director of Agriculture for approval before copies are struck off.

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Sir,

Your most obedient servant,

Sd. M. Venkatnaranappa

Secretary to Government,
Development Department.

Memo No. D 4240 30/1/35

Copy of the above is forwarded with compliments to the Director of Agriculture in Mysore with reference to your letter No. Per.50-Ho.321 of 34-35 dated 2nd December 1934.

By order,

For Secretary to Government,
Development Department.

oceedings of the Government of H.H.
the Maharaja of Mysore.

---

Read:-

Letter No.Per.50.Hc.321 of 34-35 dated 2.12.1935, from the Director of Agriculture, forwarding the Administration Report of the Serum Institute for the year 1933-34 with his introductory note thereon.

---

ORDER NO. L.S.M.-13

Dated, Bangalore, the 5th ~~February~~ March 1935.

Recorded.

2. Administration.- Mr. S.D. Achar continued to be in charge of the Institute during the year under review.

3. Biological Products.- During the year, the Institute continued to manufacture several kinds of sera and vaccines, in addition to anti-rinder-pest serum and rinderpest virus.

4. Investigations.- The institute undertook the preparation of new products ~~viz.~~, fowl cholera vaccine and fowl-pox vaccine as an experimental measure, ~~the use of which is expected to remove the existing serious handicaps to improvements in Poultry Industry.~~ ~~The fall in~~ The demand for bovine rinderpest virus and anti-rinderpest serum from the Civil Veterinary

Veterinary Department continued during the year ~~which is stated to be~~ due to further decline in the indidence of rinderpest in the State and to the greater economy in the use of these products. An important feature during the year was the introduction, on a large scale, of the "Goat Virus alone" method in place of the usual "Serum-virus simultaneous" method of inoculation. This new method is said to have proved more satisfactory and economical. The Institute is growing in popularity and the demand for all its products from ~~outside~~ other States such as Hyderabad, Baroda, Coorg, Pudukottai, Cochin, Kolhapu Sangli etc., showed a marked improvement.

5. The prices of sera and vaccines were reduced during the year in order to keep them on a par with the reduced rates outside. ~~without affecting their quality~~.

6. Grant and outlay.- Against a grant of Rs.1,00,300 during the year for the Department, the expenditure incurred was Rs.83,407 as against Rs.92,173 in the previous year

7. General.- The Sixth Annual Conferenc of the Mysore Veterinary Medical Association was held in the Institute in the -- month

month of May 1934.

8. Conclusion.- The work of the Department continued to be satisfactory during the year under report.

DRAFT)
Secry to Govt.
Devt. Deptt.

The Director of Agriculture in Mysore.
" Comptroller to Government.
" Senior Surgeon in Mysore.

K.M.R.1/12.2.35.

PROCEEDINGS OF THE GOVERNMENT OF HIS HIGHNESS THE MAHARAJA OF MYSORE.

78

Read:—

Letter No.Per.50.No.321 of 34-35 dated 2nd December 1934, from the Director of Agriculture, forwarding the Administration Report of the Serum Institute for the year 1933-34 with his introductory note thereon.

---:O:---

Order No: L.S.F.143/CV.43-34-7

Dated, Bangalore, 28th February 1935.

R e c o r d e d.

2. Administration:- Mr.S.D.Achar continued to be in charge of the Institute during the year under review.

3. Biological products:- The Institute continued to manufactur several kinds of sera and vaccines during the year, in addition to anti-rinderpest serum and rinderpest virus.

4. Investigations:- The institute undertook the preparation of new products such as fowl cholera vaccine and fowl-pox vaccine as an experimental measure. The demand for bovine rinderpest virus and anti-rinderpest serum from the Civil Veterinary Department continued to fall during the year due to further decline in the insidence of rinderpest in the State and to the greater economy in these use of these products. An important feature during the year was the introduction, on a large scale, of the "goat virus alone" method in place of the usual "serum-virus simultaneous" method of inoculation. This new method is said to have proved more satisfactory and economical. The Institute is growing in popularity and the demand for all its products from other states such as Hyderabad, Baroda, Coorg, Pudukottai Cochin, Kolhapur, Sangli, etc., showed a marked improvement.

5. Cost of production:- The prices of sera and vaccines were

were reduced during the year in order to keep them on a par with the reduced rates outside.

6. Grant and outlay:- Against a grant of Rs.1,00,300 during the year for the Department, the expenditure incurred was Rs.83,407 as against Rs.92,173 in the previous year while the revenue amounted to Rs.1,27,299.

7. General:- The Sixth Annual Conference of the Mysore Veterinary Medical Association was held in the Institute in the month of May 1934.

8. Conclusion:- The work of the Department continued to be satisfactory during the year under report.

for Secretary to Government,
Development Department.

To

The Director of Agriculture in Mysore.
The Comptroller to Government,
The Senior Surgeon in Mysore.

hks.7

Statement-

80

| | | | | |
|---|---|---|---|---|
| For 1927-28. | Amount realised | Rs. | 8,847- 8- 0 | |
| " 1928-29. | -do- | " | 47,333- 0- 0 | |
| " 1929-30. | -do- | " | 13,215- 8- 0 | |
| " 1930-31. | -do- | " | 29,538-13- 0 | |
| " 1931-32. | -do- | " | 60,098- 8- 0 | |
| " 1932-33. | -do- | " | 63,383-11- 0 | |
| " 1933-34. | -do- | " | 49,646- 4- 8 | from outside the State. |
| | | " | *77,652-11- 4 | from C.V.D.Mysore. |
| " 1934-35 for the half year ending December 1934. | | | 33,973-11- 0 | Outside the State |
| | | | 30,645- 8- 0 | from C.V.D.Mysore. |

* The cost of products supplied to the C.V.D. is being debited to the budget of that department from 1933-34.

---

12/1299

K.M.R.1.

For 1927-28 . Amount realised Rs 88247-8-0 excluding the cost of power supplies etc.

" 1928-29 — " — 47,333 — 0 — 0 — do

" 1929-30 — " — 13,215-8-0 — do

" 1930-31 — " — 29,538-13-0 — do

" 1931-32 — " — 60,098-8-0 — do

" 1932-33 — " — 63,383-11-0 — do

" 1933-34 . " ⊗ 49,646-4-8 from outside the State.

" ~~1934-35~~ ⊗ 77,652-11-4 from C.V.D. Mysore

" 1934-35 .

. for the half year ending Dec. 34. } 33,973-11-0 outside the State.
30,645-8-0 from C.V.D. Mysore.

⊗ The cost of Power supplied to the C.V.D. ~~Works~~ Factories ~~and~~ has been debited to that Depot from 1933-34.

P.S 25 of 34 Gr

F VI G 10.

# Government of His Highness the Maharaja of Mysore.

GENERAL AND REVENUE DEPARTMENTS

Seven Pamphlets

Reviews the Administration Report of the Mysore for the year 1933-34

G. O. No. V 5911-13 DATED 5/3/35

V. 43-84-7

May this be

i. printed ? } 43

ii. treated as a standing order ?

iii. published in the Gazette English Part ? } No

iv. translated ?

v. placed at the disposal of the press ?

iv. published in the Gazette Kannada Part ?

Subd forwarded

W 2/3

2/3

# Government of his highness the Maharaja of Mysore.

## GENERAL AND REVENUE DEPARTMENTS.

**G. O. No. D. 5911-13—C. V. 43-34-7, dated 5th March 1935.**

**Serum Institute.**

Reviews the Administration Report of the Mysore —— for the year 1933-34

READ—

Letter No. Per. 50-Hc. 321 of 34-35, dated 2nd December 1934, from the Director of Agriculture, forwarding the Administration Report of the Serum Institute for the year 1933-34, with his introductory note thereon.

ORDER No. D. 5911-13—C. V. 43-34-7, DATED BANGALORE, THE 5TH MARCH 1935.

Recorded.

2. *Administration.*—Mr. S. D. Achar continued to be in charge of the institute during the year under review.

3. *Biological Products.*—The institute continued to manufacture several kinds of sera and vaccines during the year in addition to anti-rinderpest serum and rinderpest virus.

4. *Investigations.*—The institute undertook the preparation of new products such as fowl cholera vaccine and fowl-pox vaccine as an experimental measure. The demand for bovine rinderpest virus and anti-rinderpest serum from the Civil Veterinary Department continued to fall during the year due to further decline in the incidence of rinderpest in the State and to the greater economy in the use of these products. An important feature during the year was the introduction, on a large scale, of the "goat virus alone" method in place of the usual "serum-virus simultaneous" method of inoculation. This new method is said to have proved more satisfactory and economical. The institute is growing in popularity and the demand for all its products from other States such as Hyderabad, Baroda, Coorg, Pudukottai, Cochin, Kolhapur, Sangli, etc., showed a marked improvement.

5. *Cost of Production.*—The prices of sera and vaccines were reduced during the year in order to keep them on a par with the reduced rates outside.

6. *Grant and Outlay.*—Against a grant of Rs. 1,00,300 during the year for the Department, the expenditure incurred was Rs. 83,407 as against Rs. 92,173 in the previous year while the revenue amounted to Rs. 1,27,299.

7. *General.*—The Sixth Annual Conference of the Mysore Veterinary Medical Association was held in the institute in the month of May 1934.

8. *Conclusion.*—The work of the Department continued to be satisfactory during the year under report.

M. VENKATANARANAPPA,
*Secretary to Government,*
*Development Department.*

To—The Director of Agriculture in Mysore.
The Comptroller to Government.
The Senior Surgeon in Mysore.

Exd.—C. K.

No. D. 5911-13—C. V. 43-34-7, DATED 5TH MARCH 1935.

## ANNEXURE.

*Copy of letter No. Per. 50-Hc. 321 of 34-35, dated the 2nd December 1934, from the Director of Agriculture in Mysore, to the Secretary to Government, Development Department.*

---

I have the honour to forward herewith, in triplicate, the Administration Report of the Mysore Serum Institute for the year 1933-34.

2. The popularity of the products outside the State has continued and among the Provinces who indented for our products were Hyderabad, Baroda, Coorg, Cochin and Pudukottai. The value of the products supplied to these together with that of the supplies made to our own Civil Veterinary Department in the year amounted to Rs. 1,27,299.

3. One of the chief features of the year is the reduction in the indents from our own State for rinderpest serum, which is largely due to the systematic compaign against the disease carried out during the last several years.

The method of inoculation with "goat virus" which was tentatively being adopted on a small scale was approved for general application and this virus was supplied in the year to a much larger extent, *viz.*, 4,690 cc. as against 400 cc. supplied last year. The method has great possibilities, and is sure to result in considerably cheapening inoculation against rinderpest.

4. The institute undertook the preparation of a new product, *viz.*, fowl cholera vaccine, which may be expected to reduce losses due to this disease which is at present a serious handicap to the Poultry Industry.

5. Considerable scientific work was also carried out and four papers were published by the different members of the staff.

6. The year's work has maintained the steady progress being made in all directions.

I would express my appreciation of the energy and keenness of the Superintendent and his staff in their work.

W D 1492—GPB—525—12-3-35

Draft

Proceedings of the Government of His Highness the Maharaja of Mysore.

---

Read:-

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ORDER NO:

Dated, Bangalore, the

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4. Investigations.- The institute undertook the preparation of new products viz., Fowl cholera vaccine and Fowl pox vaccine as an experimental measure, which is expected to remove the serious handicaps to the improvement in Poultry Industry. There was a considerable fall in the demand for Bovine Rinderpest Virus and anti-Rinderpest Serum from the Civil Veterinary Department during the year which is stated to be due to further decline in the incidence of rinderpest in the State. An important feature during the year was the introduction, on a large scale, of the "Goat Virus" alone method in place of the usual Serum-virus simultaneous method of inoculation. This new method is said to have proved more satisfactory and

economical. ~~It is gratifying to note that~~ The Institute is growing in popularity and ~~that there is increased~~ demand for all its productions from outside States such as Hyderabad, Baroda, Coorg, Pudukottai, Cochin, Kolhapur, Sangli, etc. showed a marked improvement, ~~particularly~~

5. Cost of Production.- The cost of products supplied to the Civil Veterinary Department ~~which was not being done till now~~, is being debited to that Department from the year under review. The prices of sera and vaccines were reduced during the year in order to keep them on a par with the reduced rates outside. ~~Government note with satisfaction~~ ~~that~~ The expenditure on the products supplied to the Civil Veterinary Department and places outside the State was further reduced during the year without impairing their quality.

6. General.- The Institute participated in the Mysore Dasarah Exhibition ~~held during the year 1933~~. The Sixth Annual Conference of the Mysore Veterinary Medical Association was held in the Institute in the month of May 1934. ~~Four papers were contributed by the staff during the year.~~

7. Conclusion

The work of the Department continued to be satisfactory during the year under report.

Secy: to Govt: Dev: Deptt.

To

The Director of Agriculture.
" Comptroller to Govt.
" Senior Surgeon.

# ADMINISTRATION REPORT OF THE MYSORE SERUM INSTITUTE FOR THE YEAR 1933-34

*WITH THE GOVERNMENT REVIEW THEREON.*

# Government of his highness the Maharaja of Mysore.

## GENERAL AND REVENUE DEPARTMENTS.

**G. O. No. D. 5911-13—C. V. 43-34-7, dated 5th March 1935.**

---

**Serum Institute.**

Reviews the Administration Report of the Mysore —— for the year 1933-34.

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READ—

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7. *General.*—The Sixth Annual Conference of the Mysore Veterinary Medical Association was held in the institute in the month of May 1934.

8. *Conclusion.*—The work of the Department continued to be satisfactory during the year under report.

M. VENKATANARANAPPA,
*Secretary to Government,*
*Development Department.*

To—The Director of Agriculture in Mysore.
The Comptroller to Government.
The Senior Surgeon in Mysore.

Exd.—C. K.

No. D. 5911-13—C. V. 43-34-7, DATED 5TH MARCH 1935.

## ANNEXURE.

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The method of inoculation with "goat virus" which was tentatively being adopted on a small scale was approved for general application and this virus was supplied in the year to a much larger extent, *viz.*, 4,690 cc. as against 400 cc. supplied last year. The method has great possibilities, and is sure to result in considerably cheapening inoculation against rinderpest.

4. The institute undertook the preparation of a new product, *viz.*, fowl cholera vaccine, which may be expected to reduce losses due to this disease which is at present a serious handicap to the Poultry Industry.

5. Considerable scientific work was also carried out and four papers were published by the different members of the staff.

6. The year's work has maintained the steady progress being made in all directions.

I would express my appreciation of the energy and keenness of the Superintendent and his staff in their work.

W D 1492—GPB—625—12-3-35

# ANNUAL REPORT OF THE MYSORE SERUM INSTITUTE, HEBBAL, BANGALORE, FOR THE YEAR 1933-34.

---

## I. Introduction.

The main activity of the Serum Institute during the year 1933-34 was as usual the preparation of several kinds of Sera and Vaccines on a large scale, so as to meet not only the requirements of the Mysore Civil Veterinary Department, but also the demands from several other Indian States, such as Hyderabad, Baroda, Coorg, Pudukkottai, Cochin, Kolhapur, Sangli, etc. The preparation of Rinderpest Goat Virus, Black Quarter Filtrate, and Anti Black Quarter Serum, Anti Hæmorrhagic Septicæmia Serum and Hæmorrhagic Septicæmia Vaccine, Sheep-pox Vaccine and Anti Anthrax Serum etc., which was undertaken on a much larger scale after the Institute was shifted to its present new buildings at Hebbal, in March 1932, was continued so satisfactorily and in such increased quantities as to make it possible to have large stocks of all these products, and to meet fully and promptly the demands for them from within as well as from outside the State.

In addition to the above a new product *viz.*, Fowl Cholera Vaccine was prepared during the year under report and supplied to a few Veterinary Inspectors of the State to try on the field and report the results.

In this connection it may be stated with confidence that the products prepared in this Institute are becoming more and more popular, and this is evidenced by the fact that of late (*viz.*, from 1932-33) large and repeated indents are being received regularly from outside the State also, for almost all the important products prepared in the Institute, while in the previous years indents were being received from outside the State, only for Rinderpest Virus and Serum.

The total quantity of the various products other than Rinderpest Serum, supplied to Hyderabad alone, during the year under report is 93,500 doses as against only 35,000 doses in the previous year *viz.*, about thrice that of the previous year.

Hitherto Sera, Virus, and Vaccines were being supplied to the Mysore Civil Veterinary Department as and when indents were received from the Veterinary Inspectors, without charging the cost of the products to the Department. But as this procedure involved underestimation of the Revenue of the Institute and the expenditure of the Civil Veterinary Department, the Government were pleased to direct in their Order No. D. 1116-17—C. V. 94-32-4 dated 4th September 1934, that credit in accounts should be given to the Serum Institute by the Civil Veterinary Department, for the supplies received.

In this connection it has to be observed that the total quantity of the products indented for by the Mysore Civil Veterinary Department during the year under report (*viz.*, after the above Government Order was given effect to) was much less than that indented for in the previous years, chiefly perhaps on account of the exercise of greater economy by the Staff of the Civil Veterinary Department in the use of these products. The further decline in the number of outbreakes of Rinderpest especially in the State and the substitution of Goat Virus, to some extent, for the Serum Simultaneous method of inoculation against Rinderpest also account partly for the fall in the indents for Anti Rinderpest Serum and Bovine Virus during the year.

However, in spite of the considerable fall in the supplies made to the Mysore Civil Veterinary Department and the appreciable reduction in the prices of the Sera and Vaccines given effect to from 1st April 1933 in order to keep on a par with the reduced rates adopted by the Imperial Institute of Veterinary Research, Muktesar, it is indeed highly gratifying to note that it has been possible to effect sales during the year under report to the extent of Rs. 1,27,299 against a total expenditure of Rs. 83,407.

As a result of the successful experiments conducted with Goat Virus as a single vaccine against Rinderpest, both in the Institute and on the field, Government have been pleased to approve of the use of "Goat Virus Alone" as a prophylactic measure against Rinderpest among cattle in the State, in preference to Serum Simultaneous method of inoculations, although in the case of buffaloes Sero Virus Simultaneous inoculations will have to continue to be adopted. One obvious advantage of this mode is that the cost of protection against Rinderpest would be reduced very considerably. It may however be said confidently with the experience of about five months continuous extensive field tests in addition to the experimental field tests since 1930-31, by the Civil Veterinary Department in collaboration with the Laboratory and the field experiments of the Serum Institute on Amrit Mahal animals, that "The Goat Virus Alone" inoculations have proved to be, on the whole, very satisfactory and economical.

The direct supply of products to the Veterinary Officers of the Civil Veterinary Department in Mysore, from the Institute which was taken up from July 1932 is still continued as it is found convenient and advantageous to the officers of the Civil Veterinary Department, and beneficial to the stock owners, in as much as it ensures prompt supplies of the products, although it has added much to the heavy work and correspondence of this Institute.

In addition to the routine production of Sera and Vaccines, some important experiments were also taken up in connection with the Goat Adapted Virus, in the laboratory as well as in the field. Usual experiments to find out the M.L.D's of the different strains of Black Quarter, Hæmorrhagic Septicæmia, Pasteurella Avisepticus and Anthrax were continued. Experiments for the preparation of some new products, such as Fowl-pox Vaccine, Anthrax Spore Vaccine, and Fowl Cholera Serum are in progress and they are so far encouraging. "Babesia motasi" Wenyon (1926) a large piroplasm was encountered for, what is believed to be, the first time in India, in the blood of sheep during the course of experiments in this Institute with Goat Virus as a Vaccine for sheep against Rinderpest. A descriptive note of the finding was published in the Indian Veterinary Journal, April 1934.

Four professional papers were contributed by the staff during the year, out of which one was contributed to the journals and three were presented before the sixth annual meeting of the Mysore Veterinary Medical Association during the month of May 1934.

## II. Administration.

I was in charge of the Institute throughout the year under report.

Mr. P. U. Nayar, Bacteriological Assistant, was on privilege leave for seven days with effect from 17th December 1933, with premission to affix Christmas and New Year holidays. No acting arrangements were proposed as the leave was only for a short period.

## III. Staff.

The staff of the institute at the close of the year was as follows:—

VETERINARY SECTION.

(1) 6 Veterinary Inspectors and 11 Salustries.

OFFICE SECTION.

(2) 1 Head Clerk, 1 Head Accountant, and 5 Clerks.

LABORATORY SECTION.

(3) 1 Mechanic, 2 Laboratory attendants. 1 Mediaman, and 1 Serum Room Attendant.

PACKING SECTION.

(4) 1 Carpenter and 1 Packer.

MENIAL STAFF.

(5) 1 Maistry, 63 Cattlemen, Five Peons. 2 Watchmen and 6 Thoties.

While making a reference to the above staff I am glad to state that the whole of the staff which was temporary for over five years, was confirmed with effect from 1st April 1933 as per Government Order No. 4973-75.—C. V. 60-32-9 dated 17th April 1934 consequent on the Institute having been made permanent on a reorganised scale in Government Order No. D. 5392-3—C. V. 60-32-3 dated 27th April 1933.

The Government were also pleased to sanction in their Order No. D. 4245-6—C. V. 45-33-2 dated 27th February 1934, the proposal to add the post of the Bacteriological Assistant as well as the six posts of the Veterinary Inspectors of the Institute to the cadres of the Assistant Superintendent and Veterinary

Inspectors of the Civil Veterinary Department, respectively, with a view to afford scope for the incumbents to have their cases considered for promotion to higher grades with reference to their seniority and merit in the Department.

### IV. Buildings.

The present cattle sheds having only thatched roofings are required to be repaired very frequently as they are situated on a high and open plain exposed to heavy winds from all sides; and in fact, on account of the winds during May 1934, five cattle sheds collapsed completely while the others were badly damaged. I have to repeat therefore that much anxiety and recurring expenses would be saved if permanent roofing is put up for the sheds as already suggested and pressed for on many an occasion in the previous years.

The Reserve Depot, where the newly purchased animals are kept under observation prior to their use in the Institute, was continued to be located in the Old Rifle Range Buildings. But as these buildings are in a very dilapidated condition and are not suited for housing cattle, and moreover as the plot of land including the buildings has subsequently been handed over to the Military Department, the Government have sanctioned the construction of a New Reserve Depot for the Institute. This building is proposed to be located on a suitable site in the adjacent Forest Plantation area which is expected to be handed over to the Department, when the construction of the building will be taken up by the Public Works Department.

Another important item of work under buildings, deserving urgent consideration is the construction of Residential Quarters to the Officers as well as to the staff of the Institute. The Director was pleased to recommend to Government in the previous year the construction of quarters at least for the Superintendent and for a Veterinary Inspector on duty, for the present, in order to ensure better supervision and management, to facilitate research work requiring continuous attention, and to enable closer and more frequent observation of test and experimental animals. The need for quarters at the Institute for the Staff is felt all the more on account of its long distance to the City, and this fact has already been reported to Government also. But due to obvious reasons of financial stringency these proposals have not yet been sanctioned. However, it is believed that this matter will be considered favourably at least during this year, and a beginning made early to provide the quarters.

Certain minor repairs and alterations will have to be effected to the present Institute buildings and some improvements will also have to be attended to as suggested by the Dewan during his inspection of the Institute in March 1934. Necessary action is being taken by the Public Works Department to carry out some of these minor works early.

The incinerator which was constructed in 1932 has been badly in need of certain urgent improvements to make it efficient and the same is being attended to by the Public Works Department.

A De Laitte Gas Plant was installed during the year and it is working satisfactorily.

The avenue trees and shade trees consisting mostly of Eucalyptus, Peltiform, Cassia Javanica, Gold Mohurs etc., which were planted during the last year are coming up very well. In addition to these plants about 60 mango grafts and 18 Bouganvillae were also planted in June 1934.

During the year under report a " Dip " with a water tap adjacent to it, was put up by the road side at the main entrance to the Institute, to facilitate washing the feet of the fresh animals with antiseptic lotion before they are admitted into the Institute.

Garden edge splits were fixed round the lawn in front of the Institute and also on either side of the main road leading thereto.

Some portions of the land belonging to the Institute were cultivated as in the previous year for raising different fodder crops, and about 22 tons of maize, 1,123 lbs. of lucerne, 1,037 lbs. of tomatoes and 337 lbs. of radish were got from the cultivated areas and used for feeding the animals in the Institute.

The Principal, Agricultural School, Hebbal, was permitted by the Director of Agriculture, to lay out a new cricket field to the extent of about seven acres on the Institute grounds, for use of the students of the Hebbal Agricultural School. A tennis court has also been made for the use of the officers of the Institute.

## V. Library.

The Director of Agriculture was kind enough to transfer to the Institute Library three text books, 45 bound volumes of five different periodicals together with a few unbound copies of periodicals from the Central Library of the Agricultural Department during the year under report, and he has been further requested to arrange for transfering some more books from the Central Library. It may also be mentioned that 62 text books were presented to the Institute Library by certain members of the staff.

Sixteen bulletins and pamphlets and 55 volumes on miscellaneous subjects were also added on to the Library. Thus the Library now contains 227 volumes in all on Veterinary Science and other Scientific subjects as against 32 volumes in the previous year. Ten periodicals are being subscribed for by the Institute as in the previous year, in addition to six journals received in circulation from the Office of the Superintendent, Civil Veterinary Department, and four from the office of the Director of Agriculture. Besides, a few bulletins and reports were also received in exchange.

A system of card indexing of the publications received in this Library under subject and author is proposed to be undertaken during next year.

The need for some more journals and books is very keenly felt in order that the Officers of the Institute may keep themselves posted with up-to-date information on the improved technique and the latest scientific developments. Proposals have therefore been submitted to the Director of Agriculture in the matter for kind sanction. It is hoped that necessary permission will be accorded early to subscribe for at least some more important periodicals and to purchase some valuable books in consideration of the fact that such books and journals go a long way to improve the efficiency especially of the technical and scientific work of the Institute.

## VI. Animals.

The animals required for the production of Sera and Vaccines, were continued to be purchased from the contractors by tender system as in the previous year while the small animals required for tests, were purchased locally as and when required. However, in order to minimise the purchase of these small laboratory animals, a system of breeding them in the Institute was introduced as a measure of economy and convenience, and it has given very satisfactory results.

During the year under report 197 fresh he-buffaloes, 111 discontinued Rinderpest Serum makers, 34 Anthrax Serum makers, 1,029 buffalo calves, 20 bull calves, 474 goats, 19 sheep, 38 birds and 102 laboratory small animals were used for the production of the several biologicals and for tests and experiments.

There were two unused serum producers on hand on 1st July 1933. During the year under review 195 animals were purchased making up a total of 197 animals of which 50 were used for Anti Hæmorrhagic Septicæmia Serum production, two for Anti Black Quarter Serum production and 145 for Anti Rinderpest Serum production. Sixty-two of the Rinderpest Serum donors were later immunised and used for preparing Anti Black Quarter Serum and 77 for Anti Hæmorrhagic Septicæmia Serum. There were 55 deaths among the producers of these several Sera during the year as against 54 in the previous year.

### Production and issue of Biological Products.

1. *Bovine Rinderpest Virus*:—There was a considerable fall in the demand for Bovine Virus from the Mysore Civil Veterinary Department during the year as compared with that of the previous year. This is mainly attributable to the further decline in the incidence of rinderpest in the State and to the introduction of Goat Adapted Virus as also to the earnest endeavour made during the year by the Veterinary Inspectors to confine their indents to their actual requirements. Accordingly the number of buffallo bull calves used in the Institute for the purpose and the total quantity produced were also reduced proportionately. Only 720 buffalo calves were used this year as against 1,139 calves used in the previous year. Out of 720 calves used for the production of virus 125 (*viz.*, about 18 per cent) were rejected as non-reactors, *i.e.*, as not showing the typical symptoms of the disease in time as against 147 rejected last year for the same reason. 2,93,675 c.c.'s of Bovine

Virus were produced this year as against, 5,20,775 c.c.s in the preceding year. 98,500 c. c.'s of the Virus were indented for and issued to the Civil Veterinary Department as against 2,51,550 c. c.'s supplied in the previous year.

A slight increase is, however, noticeable in the supplies made to Coorg. 7,825 c. c.'s were supplied this year as compared with 7,300 c.c.'s supplied last year.

One hundred and twenty-five c.c.s. were used by the staff of the Institute for immunity tests on Amrit Mahal cattle (herd No. 3) that had been protected by Goat Virus Alone in 1932-33. 13,450 c.c.s were made use of in the Institute for infecting the virus producers, immunising the serum producers and for experimental purposes.

2. *Goat Adapted Rinderpest Virus.*—An important feature of work during the year under report is the introduction of Goat Virus alone in some parts of the State, for immunising animals against Rinderpest, in place of the usual Serum Virus Simultaneous method of inoculation, as a result of the large number of successful experiments detailed in last year's Annual Report and further satisfactory experiments and tests conducted with this virus as a Vaccine for Rinderpest.

Two strains of "Fixed" virus—Muktesar and Bangalore—are being maintained by passages through goats. By the end of the year under report the former underwent 146th passage and the latter 104th passage through goats without any noticeable alteration in their specific character. Periodical tests both in the Institute and on the field have confirmed the safety and efficacy of the virus. 474 goats were made use of for maintaining the two strains of virus and for production of goat virus, as against 341 last year. 29,728 c.c's of goat virus were produced this year as against 23,025 c.c.s last year and 4,690 c.c.'s were issued to the Civil Veterinary Department during the year as against only 400 c.c.'s supplied in the previous year.

3. *Anti Rinderpest Serum.*—The production of this Serum and the number of buffaloes required for the purpose had also to be considerably reduced for the reasons mentioned under Bovine Rinderpest Virus. 145 he-buffaloes were used this year as against 516 during last year for producing Anti Rinderpest Serum. 3,30,320 doses (5 c. c. per dose) of the Serum were produced this year as against 5,04,525 doses in the preceding year. The total quantity of Serum available for issue during the year under report was 5,32,320 doses including 2,02,000 doses on hand at the commencement of the year. 1,70,900 doses were supplied to the Mysore Civil Veterinary Department and 2,13,000 doses to places outside the state such as Hyderabad, Coorg, and Baroda as against 2,44,550 doses and 2,59,500 doses issued respectively during the previous year; and 8,050 doses of the Serum were used in the Institute for immunising the Serum-makers.

4. *Anti Hæmorrhagic Septicæmia Serum.*—fifty fresh buffaloes and 77 out of the animals used originally for the production of Anti Rinderpest Serum, were immunised against Hæmorrhagic Septicæmia to produce the Serum, as against 80 buffaloes used last year. 1,06,691⅓ doses (15 c. c. a dose) of this serum were manufactured as against 38,606 doses in the previous year. Out of a total of 1,15,234⅓ doses, including 8,543 doses remaining on hand at the beginning of the year, 26,580 doses were supplied to the Mysore Civil Veterinary Department and 41,440 doses to places outside the state during the year as against 25,052⅔ and 17,300 doses respectively during the previous year. Hyderabad and Cochin continued to place indents for this serum in considerably larger quantities than in the previous year. The States of Kolhapur, Sangli and Ichalkaranji were also supplied with this product for the first time this year.

5. *Anti Black Quarter Serum.*—Two fresh he-buffaloes and 62 discontinued Rinderpest Serum makers were immunised and used for producing this Serum as against 40 used last year.

65,954 doses were produced during the year as against 44,530 doses in the previous year. The requirements of the Mysore Civil Veterinary Department for this product were much less than that in the previous year as black quarter filtrate alone was used extensively to control the disease in the State. 16,160 doses of the Serum were supplied this year as against 35,006 doses supplied last year. On the other hand 20,500 doses were sold to Hyderabad this year as against 11,500 in the preceding year. Rishi Valley Estate and Pudukkottai State purchased 60 doses and 700 doses respectively for the first time this year.

6. *Anti Anthrax Serum.*—No fresh animals were used this year for making this serum. The animals that were immunised and used for making the sērum in

the latter part of last year, were continued to be bled this year. 30,800 doses (15 c. c. a dose) were produced during the year as against 18,730 doses in the previous year. 2,000 doses were sold to Hyderabad as against 1,000 in the preceding year. 140 doses to Cochin State and 60 doses to Janjira State were sold for the first time this year.

## VII. Vaccines.

7. *Hæmorrhagic Septicæmia Vaccine.*—To meet the very large demands for this product this year especially from Hyderabad and Baroda, the output had to be increased over 2½ times that of the previous year. 63,800 doses (5 c. c. a dose) were manufactured as against 24,130 doses prepared last year. At the commencement of the year there were 2,500 doses on hand. Thus the total quantity available for issue was 66,300 doses. 41,250 doses were supplied to the Mysore Civil Veterinary Department as against 40,330 doses last year. 16,000 doses were sold to Hyderabad and 4,500 to Baroda as against 1,500 and 1,590 doses sold respectively during last year.

8. *Black Quarter Filtrate.*—There was an increase in the outturn of this product also. 1,56,950 doses were prepared as against 1,21,232 in 1932-33. Although the indent from the Mysore Civil Veterinary Department was slightly less, being 1,37,400 doses as compared with 1,40,187 in the previous year, the demand from Hyderabad was over four times what it was last year. 17,000 doses were sold to Hyderabad this year as against 4,000 doses last year. 100 doses to Rishi Valley Estate and 700 doses to Pudukkottai State were sold for the first time during the year.

*Black Quarter Bacterin.*—Whereas Black quarter filtrate is a germ-free product, this is a formalinised whole-killed culture of the organisms and as such, it is believed to have a higher antigenic value.

5,200 doses of this product were made experimentally during the year and 1,200 doses were supplied to the veterinary inspectors of the State for use. The reports from the veterinary inspectors who had occasion to use it are quite satisfactory and it has been suggested to the Superintendent, Civil Veterinary Department, to make use of it on a larger scale in preference to Black quarter filtrate in notorious black quarter areas especially.

*Sheep-pox Vaccine.*—There was a greater demand for this product this year than in the previous year. During the year 92 c.c's ,(Concentrated) (or 9,200 doses) of the vaccine were prepared and 67·5 c.c's (concentrated) (or 6,750 doses) were supplied to the Mysore Civil Veterinary Department as against 59·8 c.c's (concentrated) (5,980 doses) prepared and 55·05 c.c's (concentrated) (5,505 doses) supplied last year.

*Fowl Cholera Vaccine.*—2,050 doses of this vaccine were prepared experimentally for the first time during the year under report. After testing for safety and potency in the Institute 200 doses were issued to the veterinary inspectors of the State for use on fowls.

Statistical statements of all the products showing the quantities produced, supplied, and balances remaining for the year 1933-34 together with details as to the sales effected and expenditure incurred are appended to this report.

## VIII. Experiments and Research.

*Routine Bacteriology and Pathology.*—Isolation, identification and determination of the virulence of the several strains of Black quarter, Hæmorrhagic Septicæmia, Anthrax and Fowl Cholera organisms and the determination of pathogenicity of the strains of Viruses of Rinderpest, Sheep-pox and fowl-pox, were continued besides the usual maintenance of stock cultures, preparations of antigens for immunising Serum-makers and for testing Sera, Vaccines, etc.

In addition, cultural examinations (aerobic and anaerobic) of 705 samples of Rinderpest virus for sterility from other contaminations were made during the year.

$P^H$ estimations of 86 samples of culture media and 59 samples of sera, were also done.

*Details of smears examined.*

| | | |
|---|---|---|
| Anthrax | ... | 68 |
| Black-quarter | ... | 120 |
| Pasturellae | ... | 382 |
| Johne's | ... | 1 |
| Protozoa | ... | 1,432 |
| Miscellaneous | ... | 1,059 |
| Total | ... | 3,062 |

A systematic post-mortem examination of the virus producers and other experimental animals and birds that died in the Institute were conducted as shown in the following tables :—

**IX. Details of Post Mortem Examinations.**

| Kind of Animal | Confirmed | | | | | | |
|---|---|---|---|---|---|---|---|
| | Rinderpest | Hæmorrahagic-septicæmia | Black quarter | Anthrax | Fowl Cholera | Others | Total |
| Buffaloes ... ... | 5 | 40 | 5 | ... | ... | 5 | 55 |
| Buffalo Calves ... ... | 544 | 82 | 12 | ... | ... | 30 | 668 |
| Goats ... ... | 165 | ... | ... | ... | ... | 44 | 209 |
| Sheep ... ... | 2 | ... | ... | ... | ... | 4 | 6 |
| Bull calves ... ... | ... | 13 | ... | ... | ... | ... | 13 |
| Cow ... ... | ... | ... | ... | ... | ... | 1 T.B. | 1 |
| Rabbits ... ... | ... | 21 | ... | 9 | ... | 46 | 76 |
| Guineapigs ... ... | ... | ... | 29 | 8 | ... | 8 | 45 |
| White rats ... ... | ... | 4 | 2 | ... | ... | 23 | 26 |
| Poultry ... ... | ... | ... | ... | ... | 17 | 5 | 22 |
| Horse ... ... | ... | ... | ... | ... | ... | 2 | 2 |

**X. Rinderpest.**

*Bovine Virus.*—As usual, only buffalo calves were used for production of Bovine Virus. The standard of virulence of the strain was maintained well throughout except once, in the latter part of the year, when the virus was found to have lost somewhat in virulence. But a revival of the virus to its original standard of potency was effected by passaging through sheep and subsequent inoculation to and passaging through buffalo calves.

*Goat Virus.*—Certain investigational experiments bearing on the practical application of Goat Virus as a single Vaccine against Rinderpest in cattle started last year were continued, and others of similar practical value were also taken up during the year.

*Optimus Interval Between Primary Inoculation of Goat Virus and Reinforcing Dose of Goat Virus.*—In the Serum Simultaneous method of inoculation it is sometimes the practice to follow up the Sero-Virus inoculation with a dose of bull virus alone on the 6th or 7th day while yet the serum effect lasts as a safeguard against the possibility of the first virus having lost in virulence at the time of administration. In the case of Goat Virus alone inoculation, if a reinforcing dose of Goat Virus is required to be given, as it may be especially, when a reaction to the first dose of Goat Virus is not apparent in a considerable number of the inoculated animals, it is considered safe to do so on or about the 7th day by which time the extent of reaction, if any, to the first dose will have been gauged.

*Period of Viability of Goat Virus Preserved in Cold Storage.*—Experiments to ascertain the period of viability of Goat Virus preserved in cold storage were continued this year. Eight samples of Goat Virus were preserved in cold storage for a week. Then from the 8th day onwards one sample of virus was used on a batch of three calves each day up to the 15th day. The result of the tests is tabulated hereunder :—

## XI. Goat Virus Preserved in Refrigerator.

| Group No. | Material inoculated | Number of days preserved in cold storage | Animal numbers (buffalo calves) | Dose of Goat Virus | Reaction to Goat Virus | Interval between Goat and Bovine Virus in days | Result of test inoculation | Remarks |
|---|---|---|---|---|---|---|---|---|
| I | Goat Adapted virus | 8 | 722 | 5 c. c. | Reacted | 15 | Immune | Lived |
| | ,, | 8 | 723 | ,, | Mild thermal | 15 | do | do |
| | ,, | 8 | 724 | ,, | Reacted | 15 | Died | Died on the 3rd day after giving bovine Virus E. D Rinderpest. |
| II | ,, | 9 | 727 | ,, | Mild thermal | 15 | Immune | Lived |
| | ,, | 9 | 728 | ,, | do | 15 | do | do |
| | ,, | 9 | 729 | ,, | do | 15 | do | do |
| III | ,, | 10 | 735 | ,, | Very mild thermal | 15 | do | do |
| | ,, | 10 | 736 | ,, | Mild thermal | 15 | do | do |
| | ,, | 10 | 737 | ,, | Very mild thermal | 15 | do | do |
| IV | ,, | 11 | 740 | ,, | Reacted | 15 | do | do |
| | ,, | 11 | 741 | ,, | Very mild thermal | 15 | do | do |
| | ,, | 11 | 742 | ,, | Mild thermal | 15 | do | do |
| V | ,, | 12 | 745 | ,, | do | 15 | do | do |
| | ,, | 12 | 746 | ,, | do | 15 | do | do |
| | ,, | 12 | 747 | ,, | do | 15 | do | do |
| VI | ,, | 13 | 760 | ,, | Very mild thermal | 15 | do | do |
| | ,, | 13 | 761 | ,, | No reaction | 15 | do | do |
| | ,, | 13 | 762 | ,, | do | 15 | do | do |
| VII | ,, | 14 | 765 | ,, | Mild thermal | 15 | do | do |
| | ,, | 14 | 766 | ,, | do | 15 | do | do |
| | ,, | 14 | 767 | ,, | do | 15 | do | do |
| VIII | ,, | 15 | 768 | ,, | No reaction | 15 | do | do |
| | ,, | 15 | 769 | ,, | Mild thermal | 15 | do | do |
| | ,, | 15 | 770 | ,, | Very mild thermal | 15 | do | do |
| IX | ,, | 15 | 999 | ,, | Reacted | 15 | Died | Died on the 2nd day after giving Bovine Virus E. D. Rinderpest. |
| | ,, | 15 | 1000 | ,, | Thermal | 15 | Immune | Lived |
| | ,, | 15 | 1001 | ,, | Reacted and died | 15 | do | Died before getting the test dose. |

From the above it was seen that the calves that got the virus preserved in the refrigerator up to ten days showed good reaction whereas those that received the virus 10 to 15 days old in the refrigerator evinced either mild or on reaction. Yet when all these animals were tested later with virulent Bovine Virus all of them were found to be immune to it.

Results of further experiments to test the potency of Goat Virus kept in cold storage for 16 to 20 days may be tabulated as follows :—

| Group No. | Material inoculated | No. of days preserved in cold storage | Animal numbers (buffalo calves) | Dose of goat virus | Reaction to Goat Virus | Interval between Goat and bovine virus | Result of test inoculation | Remarks |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| I | Goat Adapted Virus. | 16 | 1,004 | 5 c. c. | Died ... | ... | ... | Distomasis. |
| | ,, ... | 16 | 1,005 | ,, | Mild thermal reaction. | 15 | Immune ... | Lived. |
| | ,, ... | 16 | 1,006 | ,, | Reaction ... | 15 | ,, ... | ,, |
| II | ,, ... | 17 | 1,007 | ,, | Very mild thermal. | 16 | ,, ... | ,, |
| | ,, ... | 17 | 1,008 | ,, | No reaction. | 16 | Reacted ... | Died E. D. Rinderpest. |
| | ,, ... | 17 | 1,009 | ,, | ,, ... | 16 | Immune ... | Lived. |
| III | ,, ... | 18 | 1,010 | ,, | Reacted and died | ... | ... | Died before getting the test dose E. D. Rinderpest. |
| | ,, ... | 18 | 1,011 | ,, | No reaction ... | 15 | Immune ... | Lived. |
| | ,, ... | 18 | 1,012 | ,, | ,, ... | 15 | ,, ... | ,, |
| IV | ,, ... | 19 | 1,015 | ,, | ,, ... | 15 | ,, ... | ,, |
| | ,, ... | 19 | 1,016 | ,, | ,, ... | 15 | Reacted and died | Rinderpest. |
| | ,, ... | 19 | 1,017 | ,, | ,, ... | 15 | Immune ... | Lived. |
| V | ,, ... | 20 | 1,018 | ,, | ,, ... | 15 | Reacted and died | Rinderpest. |
| | ,, ... | 20 | 1,019 | ,, | ,, ... | 15 | ,, ... | ,, |
| | ,, ... | 20 | 1,020 | ,, | ,, ... | 15 | Reacted ... | Lived. |

The 16, 17, and 18 days old virus gave rise to a fairly good reaction and a subsequent test with bovine virus revealed that about 85 per cent of the animals had acquired immunity. But the last two samples, *i.e.*, 19 and 20 days old virus caused no reaction at all and when they were later given bovine virus 50 per cent of them succumbed to the disease.

This experiment was extended with goat virus preserved in cold storage for 21, 29 and 39 days and the results are set down in the following table which shows that virus kept in the cold storage for 21 days and over loses its antigenic value completely as none of the calves that got the viruses withstood the test dose of virulent bovine virus.

| Group No. | Material inoculated | No. of days preserved in cold storage | Animal numbers (buffalo calves) | Dose of goat virus | Reaction to Goat Virus | Interval between Goat and bovine virus | Result of test inoculation | Remarks |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| I | Goat Adapted Virus. | 21 | 536 | 5 c. c. | No reaction ... | 10 | Reacted ... | Died Rinderpest. |
| | ,, ... | 21 | 587 | ,, | ,, ... | 10 | ,, ... | ,, |
| | ,, ... | 21 | 588 | ,, | ,, ... | 10 | ,, ... | ,, |
| II | ,, ... | 29 | 650 | ,, | ,, ... | 10 | ,, ... | ,, |
| | ,, ... | 29 | 651 | ,, | ,, ... | 10 | ,, ... | ,, |
| | ,, ... | 29 | 652 | ,, | ,, ... | 10 | ,, ... | ,, |
| III | ,, ... | 39 | 684 | ,, | ,, ... | 10 | ,, ... | ,, |
| | ,, ... | 39 | 685 | ,, | ,, ... | 10 | Reacted and died | Rinderpest. |
| | ,, ... | 39 | 686 | ,, | ,, ... | 10 | ,, .. | ,, |

From the experiments detailed above, it may be concluded that goat virus kept in cold storage up to 10 days may be safely and effectively used for purposes of immunisation, although sufficient potency is seen to be retained in the virus even up to 15 days.

### XII. Viability of Goat Adapted Virus Preserved at Room Temperature.

Nine samples of virus were kept at room temperature well protected from light for this purpose and each sample was used on a batch of three buffalo bull calves as tabulated hereunder. The physical appearance of the samples were unaltered at the time of use except of the last one which had become slightly dark in colour.

### XIII. Goat Virus Preserved in Room Temperature.

**TEST I.**

| Group No. | Material inoculated | No. of days preserved in Room Temperature | Animal numbers (buffalo calves) | Dose of virus | Reaction to Virus | Interval between Goat virus and bovine virus (in days) | Result of bovine virus test | Remarks |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| I | Goat Virus ... | 5 | 603 | 5 c. c. | Mild thermal... | 10 | No reaction ... | Immune. |
| | ,, ... | 5 | 604 | ,, | Typical thermal | 10 | ,, ... | ,, |
| | ,, ... | 5 | 605 | ,, | Mild thermal | 10 | ,, ... | ,, |
| II | ,, ... | 6 | 606 | ,, | Thermal .. | 17 | ,, ... | ,, |
| | ,, ... | 6 | 607 | ,, | ,, ... | 17 | ,, ... | ,, |
| | ,, ... | 6 | 608 | ,, | ,, ... | 17 | ,, ... | ,, |
| III | ,, ... | 7 | 621 | ,, | No reaction ... | 10 | Reacted .. | Died of Rinderpest within 10 days after the test dose of Virus. |
| | ,, ... | 7 | 622 | ,, | Mild terminal | 10 | ,, ... | Lived. |
| | ,, ... | 7 | 623 | ,, | No reaction ... | 10 | ,, ... | Died of Rinderpest on the 11th day after the test dose of Virus. |
| IV | , ... | 8 | 624 | ,, | Reacted ... | 18 | No reaction ... | Immune. |
| | ,, ... | 8 | 625 | ,, | No reaction .. | 18 | Mild reaction ... | Died of Rinderpest on the 12th day after the test dose of Virus. |
| | ,, ... | 8 | 626 | ,, | ,, ... | 18 | Reacted .. | Died of Rinderpest on the 11th day after the test dose of Virus. |
| V | ,, ... | 9 | 633 | | ,, ... | 14 | ,, ... | Lived. |
| | ,, .. | 9 | 634 | ,, | Mild thermal | 14 | ,, ... | Died of Rinderpest on the 8th day after the test dose of Virus. |

**Test I**—*continued.*

| Group No. | Material inoculated | No of days preserved in Room Temperature | Animal numbers (buffalo calves) | Dose of virus | Reaction to virus | Interval between Goat virus and bovine virus (in days) | Result of bovine virus test | Remarks |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 10 |
| VI | Goat Virus ... | 9 | 635 | 5 c. c. | Mild thermal | 14 | No reaction ... | Lived. |
| | ,, ... | 10 | 639 | ,, | Not appreciable. | 13 | Reacted ... | ,, |
| | ,, ... | 10 | 640 | ,, | No reaction ... | 13 | ,, ... | ,, |
| VII | ,, ... | 10 | 641 | ,, | ,, ... | 13 | ,, ... | ,, |
| | ,, ... | 10 | 644 | ,, | ,, ... | 12 | ,, ... | Died of Rinderpest within 11 days after the test dose of virus. |
| | ,, ... | 10 | 645 | ,, | Reacted ... | 15 | No reaction ... | Lived. |
| | ,, ... | 10 | 646 | ,, | No reaction ... | 15 | Reacted ... | Died of Rinderpest within 11 days after the test dose of virus. |
| VIII | ,, ... | 12 | 647 | ,, | No reaction ... | 11 | ,, ... | Died of Rinderpest within 10 days after the test dose of virus. |
| | ,, ... | 12 | 648 | ,, | No reaction ... | 11 | ,, ... | Lived. |
| | ,, ... | 12 | 649 | ,, | ,, ... | 11 | Mild thermal ... | ,, |
| IX | ,, ... | 13 | 655 | ,, | ,, ... | 13 | No reaction ... | ,, |
| | ,, ... | 13 | 656 | ,, | Reacted ... | ... | ... | Died on the 12th day after inoculating with Goat virus. |
| | ,, ... | 13 | 657 | ,, | No reaction ... | 13 | No reaction ... | Lived. |

The above experiment shows that the first and second batches that got the 5th and 6th day old virus respectively evinced a fairly good thermal reaction, while the other batches showed none at all. A subsequent test dose of bovine virus given after the lapse of a fortnight gave rise to no reaction in these batches proving thereby that the five and six days old virus had not lost its efficacy, whereas in the case of the remaining batches that received virus seven days old and over, the test dose gave over 70 per cent reaction with a mortality of 43 per cent. But when a second test was conducted with samples of virus preserved in room temperature for seven to ten days on four batches of calves the results showed, as can be seen from the following table, that the virus retained its antigenic value up to ten days in room temperature.

**TEST II.**

| Group No. | Material inoculated | No. of days preserved in room temperature | Animal numbers (buffalo calves) | Dose of virus | Reaction to Virus | Interval between Goat virus and bovine Virus | Result of Bovine virus test | Remarks |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| I | Goat Virus ... | 7 | 1,021 | 5 c. c. | No reaction ... | 15 | No reaction ... | Died on the 5th day of bovine virus. Etiological diagnosis—doubtful. |
| | ,, ... | 7 | 1,022 | ,, | Thermal ... | 15 | ,, ... | Lived. |
| | ,, ... | 7 | 1,023 | ,, | Very mild thermal. | 15 | ,, ... | Died on the next day after giving test dose of virus. |
| II | ,, ... | 8 | 984 | ,, | Mild thermal | 15 | ,, ... | Lived. |
| | ,, ... | 8 | 985 | ,, | Very mild thermal. | 15 | ,, ... | ,, |
| | ,, ... | 8 | 986 | ,, | Reacted. | 15 | ,, | ,, |
| III | ,, ... | 9 | 987 | ,, | Mild thermal | 15 | ,, ... | ,, |
| | ,, ... | 9 | 988 | ,, | Thermal ... | 15 | ,, ... | ,, |
| | ,, ... | 9 | 989 | ,, | Reacted. ... | 15 | ,, ... | ,, |
| IV | ,, ... | 10 | 993 | ,, | Thermal ... | 15 | ,, ... | ,, |
| | ,, ... | 10 | 994 | ,, | ,, ... | 15 | ,, ... | ,, |
| | ,, ... | 10 | 995 | ,, | ,, ... | 15 | ,, ... | ,, |

Further tests are therefore necessary to arrive at a definite conclusion in the matter and they will be undertaken next year.

### XIV. Reaction to Goat Virus in Sheep.

As sheep are known to be susceptible to Rinderpest, Goat Virus was tried on a batch of six sheep to gauge the extent of reaction in them for purposes of immunisation. Four out of six evinced good thermal reaction and the remaining

two did not respond. But owing to the resuscitation of *Babesia motasi* in their blood during the period of reaction the experiment could not be completed. Further work, in this connection, will be taken up later on.

### XV. Goat Virus with and without Anti-serum on Buffaloes.

It has been the experience of both laboratory and field workers in Mysore that goat virus alone as a single vaccine on buffaloes gives rise to a reaction of an intensive nature with a small per-centage of mortality and in order to confirm this view and to ascertain whether a controlling dose of serum is absolutely essential to minimise the severity of the reaction, the following work was taken up.

A batch of 50 buffaloes got for the production of Anti Hæmorrhagic Septicæmia Serum was subjected, before immunisation against Hæmorrhagic Septicæmia, to "Goat Virus Alone" inoculation against rinderpest; but over 80 per cent of these animals showed severe reactions with two deaths.

Subsequently a batch of 12 calves were inoculated with goat virus and anti rinderpest serum simultaneously, the dose of the latter varying from 10 c.c. to 30 c.c. per 600 lbs. body weight. From the reactions observed, it is concluded that the use of anti serum with Goat Virus is advisable in order to ensure safety and that 15 to 20 c.c. per 600 lbs. body weight of the serum appears to be an adequate controlling dose for the purpose.

### XVI. Minimum Infective Dose of Goat Virus.

Some workers have recorded that Rinderpest Virus of bovine origin is capable of infecting susceptible cattle in dilutions up to one in 10,000 but recently Hall from Nigeria reports that he succeeded in infecting cattle with 0·2 to 0·02 c.c. but failed with 0·002 c.c. Apart from this difference of opinion regarding bovine virus, it is also to be taken into consideration that goat adapted virus is almost an attenuated live vaccine and as such the range of dilution may even be more limited in the matter of minimal infective dose than that of bovine virus. In order to work this out 1:10,000 and 1:1,000 dilutions of goat virus were tried on two batches of buffalo calves and both the batches failed to show any reaction. Subsequent immunity test with bovine virus gave rise to severe reaction with 50 per cent mortality revealing thereby that goat virus in these higher dilutions is not capable of causing infection. Further work, in this connection, is in progress.

### XVII. Field Experiment with Goat Virus.

Twenty-five heads of cattle ranging from one to five years of age out of 213 Amritmahal cattle of herd No. 3 which had been protected against rinderpest with goat virus alone during February 1933, were tested with bovine virus for immunity, after an interval of eight months, *i.e.*, during the month of October 1933. Daily observations for ten days showed no reaction of any kind. Three bull calves on the scene of the experiment at Birur and 12 buffalo bull calves in the Institute were maintained as controls for the test virus. Out of these 15 controls, 13 animals developed severe reactions and eight of them succumbed to the disease.

From the above it is seen so far that cattle protected by goat virus acquire a solid immunity which lasts up to eight months. The remaining untested animals of the herd will be taken up in batches at varying intervals for further tests to ascertain the longevity of the immunity conferred on cattle by goat rinderpest virus

### XVIII. Tissue Vaccines against Rinderpest.

Vaccines prepared from various glands such as Spleen, Lymphatic glands, and testicles of bovines, affected with rinderpest have been tried by several workers and after extensive trials with these various glandular preparations, spleen tissue vaccine has been considered to be the best. The spleen extirpated from a goat infected with rinderpest at the height of reaction was made use of in the preparation of this vaccine in the Institute. The vaccine with 0·5 per cent phenol, preserved in cold storage for 3, 16, 34, 59 and 90 days was used on buffalo calves which were subjected to an immunity test after an interval of about three weeks. An equal number of goats also was simultaneously used for a comparative study.

One sample of vaccine with formaline as preservative was also prepared, and a test was conducted, but as the result was not satisfactory further work will have to be undertaken.

The results of the tests are for convenience, tabulated hereunder.

## XIX. Details of Inoculation and result of Goat Spleen Vaccine against Rinderpest.

A.

| Serial No. of batches | Material inoculated | Number of days preserved in cold storage | Buffalo calves: Animal No. | Dose | Reaction to vaccine | Interval between vaccine and immunity test with virus | Result of immunity test with Bovine Virus | Remarks |
|---|---|---|---|---|---|---|---|---|
| 1 | Goat spleen Vaccine (Carbolised). | 3 | 719 | 1 c. c. ... | ... | ... | ... | Died on the 4th day due to causes other than Rinderpest. |
| | Do ... | 3 | 720 | ,, ... | Mild thermal. | 22 | Immune... | No symptoms |
| | Do ... | 3 | 721 | 2 c. c. ... | Nil ... | 22 | ,, ... | Do |
| 2 | Do ... | 16 | 738 | 1 c. c. ... | Mild ... | 22 | ,, ... | Mild thermal reaction only between 4th and 6th day. |
| | Do ... | 16 | 739 | ,, ... | ,, ... | 22 | ,, ... | |
| | Do ... | 16 | 740 | ,, ... | ,, ... | 22 | ,, ... | |
| 3 | Do ... | 34 | 805 | ,, ... | Nil ... | 22 | ,, ... | No symptoms |
| | Do ... | 34 | 806 | ,, ... | ,, ... | 22 | ,, ... | Do |
| | Do ... | 34 | 807 | ,, ... | ,, ... | 22 | ,, ... | Do |
| 4 | Do ... | 59 | 832 | ,, ... | ,, ... | 20 | ,, ... | Do |
| | Do ... | 59 | 833 | ,, ... | ,, ... | 20 | Reacted | Severe thermal reaction from 4th to 7th day and specific lesions on the 7th day. |
| | Do ... | 59 | 824 | ,, ... | ,, ... | 20 | ,, | |
| 5 | Do ... | 90 | 923 | 5 c. c. ... | ,, ... | 22 | ,, ... | Thermal reaction from 4th to 9th day, specific lesions on the 8th day. |
| | Do ... | 90 | 924 | ,, ... | ,, ... | 22 | ,, ... | Diarrhoea and faint mouth lesions. |
| | Do ... | 90 | 925 | ,, ... | ,, ... | 22 | Immune... | No symptoms |
| 6 | Goat spleen Vaccine (Formalised). | 5 | 871 | 1 c. c. ... | No reaction | 15 | Reacted.. | Lived |
| | Do ... | 5 | 872 | ,, ... | ,, ... | 15 | ,, ... | Died of Rinderpest |
| | Do ... | 5 | 873 | ,, ... | ,, ... | 15 | ,, ... | Do |

## XX. Details of Inoculation and Result of Goat Spleen Vaccine against Rinderpest.

B.

| Serial No. of batches | Material inoculated | Number of days preserved in cold storage | Goats (For Confirmatory Test): Animal No. | Dose | Reaction to Vaccine | Interval between vaccine and immunity test with virus | Result of immunity test with Bovine Virus | Remarks |
|---|---|---|---|---|---|---|---|---|
| 1 | Goat spleen Vaccine (Carbolised), | 3 | 254 | 1 c. c. ... | Reacted... | ... | ... | Died before immunity test due to other causes than Rinderpest. |
| | Do ... | 3 | 255 | ,, ... | ,, ... | 22 | Immune... | No symptoms |
| | Do ... | 3 | 256 | ,, ... | ,, ... | 22 | ,, ... | Do |
| 2 | Do ... | 16 | 278 | ,, ... | ,, ... | 22 | ,, ... | Died next day after giving vaccine due to impaction. |
| | Do ... | 16 | 279 | ,, ... | Nil ... | 22 | ,, ... | No symptoms |
| | Do ... | 16 | 280 | ,, ... | ,, ... | 22 | ,, ... | Do |
| 3 | Do ... | 34 | 305 | ,, ... | Reacted... | 22 | ,, ... | Do |
| | Do ... | 34 | 306 | ,, ... | ,, ... | 22 | Died ... | Died on the 5th day *E. D. Rinderpest. |
| | Do ... | 34 | 307 | ,, ... | ,, ... | ... | ... | Died on the 7th day |
| 4 | Do ... | 59 | 347 | ,, ... | Nil ... | 20 | Immune... | No symptoms |
| | Do ... | 59 | 348 | ,, ... | Reacted... | 20 | ,, .. | Thermal reaction from the 3rd to 5th day after vaccination. |
| | Do ... | 59 | 349 | ,, .. | ,, ... | 20 | ,, ... | Do |
| 5 | Do ... | 90 | 398 | 5 c. c. ... | Nil ... | 22 | ,, ... | No symptoms |
| | Do ... | 90 | 399 | ,, ... | ,, ... | 22 | ,, ... | Thermal reaction |
| | Do ... | 90 | 400 | ,, .. | ,, .. | 22 | ,, ... | Mild thermal reaction. |
| 6 | Goat spleen Vaccine (Formalised). | 5 | 368 | 1 c. c. ... | No reaction | 20 | No reaction | Lived |
| | Do ... | 5 | 369 | ,, ... | ,, ... | 20 | ,, ... | Do |
| | Do ... | 5 | 370 | ,, ... | ,, ... | 20 | ,, ... | Do |

* E. D. Etiological Diagnosis.

It is seen from the details noted above that the phenolised vaccine preserved in cold storage up to 34 days gave a mild thermal reaction in bovines and conferred immunity against artificial infection with virulent bovine rinderpest virus, after about three weeks; while most of the animals that got the vaccine preserved for 59 and 90 days did not evince such immunity on subsequent test.

It would be interesting to mention here that our results almost agree with those of Kerr and Menon (1934) in Bengal. Most of the goats in the confirmatory test showed a typical reaction of rinderpest which is sufficiently indicative of the presence of virus in the vaccine.

### XXI. Sheep-pox Vaccine.

Two batches of sheep were used for making this vaccine.

After scarifying the skin on the chest and abdominal region fairly deeply, the strain of glycerinated pox lymph maintained in the Institute was applied and all the sheep showed the pox exanthema more or less well developed along all the lines.

The material from the localised "takes" was carefully collected as usual and preserved with glycerine in the cold storage.

It is of interest to note that the glycerinated pox lymph that was used for infecting these batches of sheep had been kept in cold storage for five and seven months respectively prior to their use and yet they were found quite as viable as when fresh.

### XXII. Fowl-pox Vaccine.

Some preliminary experiments were conducted in order to prepare fowl-pox vaccine with pox material kindly collected by Mr. K. Ranganatha Rao, Assistant Superintendent, Scientific Section, Civil Veterinary Department, from a naturally affected case in Dodballapur Taluk.

Three batches of fowls (three in each batch) were infected with this material. Six of them took the infection well. Fresh material was collected from the typical lesions and a few pigeons were vaccinated with this material to bring about attenuation of the virus by such passage. A few fowls were also vaccinated to serve as controls.

The pigeons failed to take the infection although, in the fowls, the disease was reproduced successfully. Pox material was collected from these fowls and preserved for further work.

### XXIII. Blackquarter.

Collection of field strains of blackquarter in the form of strips of affected muscles taken from animals which had succumbed to the disease in the different parts of the State was continued with the kind co-operation of the officers of the Civil Veterinary Department and added on to the stock in the Institute. In all 15 samples were received from the State during the year and our stock now contains 64 strains including those of Muktesar, Madras Veterinary College, and the National Collection of Type Cultures of Lister Institute, London. All the strains were subjected to tests for purity and pathogenicity before addition to the stock and it was found that some of the local strains were much more pathogenic to our animals than most of the strains received from outside. Corn-liver medium (according to L. S. McClung and Elizabeth McCoy) was tried in addition to Liver broth, Martin's peptone, Noguchi's media, etc., that are in general in use for routine work with good results.

*Blackquarter Filtrate.*—A mixture of the above strains was used for the preparation of the filtrate to make it as polyvalent as possible. The routine safety and potency tests of the products on buffalo calves were conducted by inoculating 5 to 10 c.c. of the filtrate followed by a test dose of 2 c.c. of virulent culture (that kills a guineapig with 0·5 c.c. broth culture in 12 to 24 hours) after three weeks. The results were uniformally satisfactory. Field results continued to be satisfactory even though there was an almost negligeable percentage of mortality among some of the protected animals in certain localities.

*Blackquarter Bacterin.*—(Formalised whole "killed" Culture or Vaccine).

The same mixed strains were used for the preparation of this product also, and safety and potency tests were conducted as in the case of the filtrate. But a slight swelling was noticed in the animals at the site of inoculation, which subsided uneventfully in a couple of days. It is believed that this vaccine possesses a better antigenic value than the filtrate perhaps because of the presence of the bacterial bodies in addition to the aggressin. However, this product is still in the experimental stage in our hands.

## XXIV. Field Experiments.

During the year under report, the Institute undertook some field experimental work only at the Cattle Breeding Station, Ajjampur. Reports were received from this Farm about the periodical outbreaks of Black-quarter which occured just before and during the monsoon, *i.e.*, during the months of March and April and also during September and October. Sero Filtrate or Filtrate alone inoculations used to be conducted during the outbreaks. But this did not appear to give the desired effect as, in spite of it, the seasonal outbreaks continued to recur. As desired by the Live-Stock Expert in Mysore, investigations were undertaken by the Institute and it was found that the low lying marshy black cotton soil of the place is a perennial source of infection, and the only way open for an effective prophylaxis in that locality appeared to be a systematic periodical inoculation (protection) of the young stock on the farm during the months of February and August, *i.e.*, just about a month prior to the time of anticipated outbreaks. It was also decided that animals below two years and above three months of age should be protected twice a year, *i.e.*, during the months of February and August, and animals over two years and below five years of age once only in a year. Accordingly 210 animals (89 with Sero-filtrate and 121 with filtrate alone) were inoculated during the month of September 1933, and 311 in February 1934, with filtrate alone. It is gratifying to observe that there have been no cases of Black-quarter on the Farm since then.

It may not be out of place here to add that the sero-filtrate simultaneous method of inoculation was also adopted on a Dairy Farm at Madanapally on the scene of an outbreak by their veterinarian and good results were reported.

Black-quarter Bacterin was sent to the veterinary inspectors of Dodballapur and Devanhalli for Field trials, and satisfactory results were reported.

## XXV. Hæmorrhagic Septicæmia Vaccine.

Bombay Broth or meat Digest Broth adjusted to PH 6·8 as well as nutrient broth with the same PH reaction were used as media for the vaccine.

All the three strains (Local, Madras and Muktesar) maintained in the institute were incorporated in the preparations to make the product polyvalent. The vaccine is giving satisfactory results both in our tests and on the field.

## XXVI. Anthrax.

With a view to prepare in time a live spore vaccine for Anthrax, certain preliminary tests, to ascertain the minimal lethal dose of a local strain obtained from a cow, belonging to Sir C. V. Raman, soon after its death from the disease, were taken up. From the tests it is observed that 0·0001 c.c. of the culture killed Guinea pigs in 36 to 72 hours and 0·00001 c.c. in 48 to 58 hours; whereas 0·0001 c.c. killed rabbits in 4½ to 5 days and 0·00001 in 4 to 6½ days. But Guinea pigs and rabbits which received 0·0000001 c.c. and 0·000001 c.c., respectively survived the dose. Further work, in this connection, is in progress.

## XXVII. Fowl Cholera.

Some outbreaks of Fowl Cholera are being encountered in the State with severe mortality of about 90 to 100 per cent. The preparation of a vaccine for this disease was therefore taken up on an experimental scale during the year. The seed cultures kindly made available by the Imperial Institute of Veterinary Research in Muktesar, and by the Madras Veterinary College, were made use of in the preparations. The vaccine was tested on fowls and the results were satisfactory. Small quantities were issued to three veterinary inspectors for field test and report. Two of them could not use it as they had no opportunity to try it. The Veterinary Inspector of Mysore, who used it, has also reported very favourably. Further tests with this product will be arranged to be held as occasions arise.

Bovine Hæmorrhagic Septicæmia Serum was used on one occasion on fowls during an outbreak of fowl cholera by the veterinary inspector, Devanhalli, with very good results. Attempts are also being made to prepare specific Anti-Fowl Cholera serum for use early next year.

## XXVIII. Protozoology.

Blood smears from animals within this Institute as well as those received from outside, numbering 1,432 in all, were examined during the year. It may be of interest to record that as a result of examination of some thousands of blood smears from local buffaloes during the past six years, it is seen that although over 40 per cent of them harbour Theileria mutans without undergoing any systemic distubrance, they are, as a class, free from Babesia bigemina, which is rather common in local cattle. Out of 1,317 blood smears from buffaloes alone examined during the year Theileria mutans was found in 558 or in about 43 per cent. Babesia bigemina in 45 blood smears of cattle, Babesia motasi in 67, of sheep and nuttalia equi in one smear of a horse were also recorded. Babesia motasi, Wenyon (1926) were encountered and recorded, perhaps, for the first time in India in some sheep under Goat Virus experiments. This formed the subject of a paper by Messrs. S. D. Achar and G. N. Srikantiah, published in the Indian Veterinary Journal, Volume 10, No. 4, Madras. The parasites appeared in the blood of sheep during the period of febrile reaction by the injection of Goat Rinderpest Virus and persisted in the blood for about 13 days. Transmission experiments were tried by injecting the blood from affected sheep, containing large numbers of parasites to healthy sheep, goats, cow, calf, rabbits, and buffalo calves. Except the sheep no other animal showed the parasites. Sheep kept in close contact with affected ones also showed the presence of the parasites on the 9th day. Three apparently healthy sheep purchased at random and kept under observation in an isolated place also revealed the presence of the parasites on a routine examination of blood. This suggests that sheep in this area commonly harbour the parasites although their presence in the blood is not ordinarily associated with any clinical symptoms.

The invertebrate intermediate host in these cases has been suspected to be Hæmaphysal, is Bispinosa whereas Babesia motasi is said to be transmitted by the tick Rhipicephalus bursa by motas (1923) in Transvaal.

## XXIX. Helminthological Notes.

As has been mentioned elsewhere in this report, a systematic postmortem examination was conducted on every animal that died in the institute, in the course of which an attempt was also made to collect and classify the parasites encountered, with a veiw to make a rough study of the probable incidence of parasitic affection among the different kinds of animals that are received mostly from different parts of the State. Thus, of the cases on which autopsy was held, parasites were encountered and collected from about 22·8 per cent of the total number.

The parasites collected have been classified as detailed below :—

| *Name of parasites.* | Horses. | *Location.* |
|---|---|---|
| | Bots ... ... ... | Stomach. |
| NEMATODES— | | |
| | Habronema microstoma ... ... | Stomach. |
| | Habronema megastoma ... ... | |
| | Oxyuris equi ... ... | Intestines. |
| | Ascaris equorum ... ... | |
| | Strongylus equinus ... ... | |
| | **Buffaloes.** | |
| TREMATODES— | | |
| | Fasciola gigantica ... ... | Liver (bile ducts) and gall bladder. |
| | **Paramphistomum Explanatum.** | Rumen, bile ducts, gall bladder and some times even in the intestines. |
| CESTODES— | | |
| | Moniezia alba ... ... | Intestines. |
| NEMATODES— | | |
| | Dictyocaulus viviparus ... ... | Lungs. |
| | Setaria labiato—papillosa ... ... | Peritonial cavity. |

### Goats.

| *Name of parasites.* | | *Location.* |
|---|---|---|
| | Larvæ of Oestrus ovis ... ... | Nasal chambers. |
| TREMATODES— | | |
| | Paramphistomum Cervi ... ... | Rumen. |
| NEMATODES— | | |
| | Trichuris ovis ... ... | Intestines. |
| | Oesophagestomum columbianum ... | |
| | Oesophagestomum venulosum ... | |
| CESTODES— | | |
| | Cysticercus tenuicollis ... ... | Peritoneum, lungs and liver. |
| | Moniezia Alba ... ... | Intestines. |
| | Avitellina centripunctata ... ... | |
| | Moniezia planissima ... ... | |
| | Moniezia expansa ... ... | |
| | Stilesia globipunctata ... ... | |

### Sheep.

| | | |
|---|---|---|
| TREMATODES— | | |
| | Paramphistomum cervi ... ... | Rumen. |
| NEMATODES— | | |
| | Hæmonchus contortus ... ... | Abomasum. |
| CESTODES— | | |
| | Moniezia expansa ... ... | Intestines |

### Fowls.

| | | |
|---|---|---|
| NEMATODES— | | |
| | Heterakis gallinæ ... ... | Cæcum. |
| | Ascaridia perspicillum ... ... | Intestines. |
| CESTODES— | | |
| | Davainea echinobothrida ... ... | Intestines. |
| | Davainea tetragona ... ... | |
| | Choanotænia infundibulum ... ... | |

### White Rats.

| | | |
|---|---|---|
| NEMATODES— | | |
| | Trichosomoides crassicanda ... ... | Bladder. |

## XXX. Revenue and Expenditure.

The total sales of the biological products to places outside the State as well as to the Mysore Civil Veterinary Department and also of "Done" animals and manure within the State come up to Rs. 1,27,299 during the year under report as against Rs. 1,77,706 during 1932-33, the total sales effected to places outside the State alone being Rs. 49,646 as against Rs. 58,751 in the previous year. The decrease in the total Revenue as compared with that of the last year is attributable mainly to the considerable reduction in the prices of the products (given effect to from 1st April 1933) as already explained under introduction.

It may also be noticed, in this connection, that there is a corresponding reduction in expenditure as well during the year under report. Out of the total budget grant of Rs. 1,00,300 for the Institute for expenditure during the year 1933-34, a sum of only Rs. 83,407-1-2 is actually spent (saving thereby Rs. 16,892-14-10) as against Rs. 92,173 expended last year out of the total budget grant of Rs. 1,03,700.

Thus it would seem that the Institute has worked during the year under report at a considerable profit and it may also be said that the working of the Institute from a financial point of view is as good as, if not better than, last year's in spite of certain unfavourable factors such as, the reduction in prices, the control on indents by the Mysore Civil Veterinary Department, etc., as detailed in the introduction above.

## XXXI. General.

As in previous years, Mr. K. Ranganatha Rao, Assistant Superintendent, Scientific Section, Mysore Civil Veterinary Department was afforded in this Institute all facilities to continue his research work on Johne's diseases, some parasitic and other diseases and to carry on the routine laboratory work of the Mysore Civil Veterinary Department.

*Exhibition.*—As usual, the biological products prepared in this Institute together with some interesting demonstration photographs were arranged to be exhibited in the last Dasara Exhibition, held at Mysore in the months of September and October 1933, deputing one of the veterinary inspectors of the Institute to be in charge of the exhibits and the exhibition committee was pleased to award a Gold Medal Certificate in appreciation of the exhibits of this Institute.

*Mysore Veterinary Medical Association.*—As desired by the Director of Agriculture in Mysore, the Sixth Annual Conference of the Association was held in this Institute in the month of May 1934 in order to afford an opportunity to all those that assembled for the Conference to acquaint themselves with the Scientific activities of the Institute. Accordingly, some interesting demonstrations were arraged for on that occasion and all the members were shown round the different sections and explained the details of preparations and use of the various biological products prepared in this Institute. It may also be mentioned here that three papers were presented before the Conference by the members of the staff of this Institute.

*Publications.*—The papers detailed below were submitted for publication by members of the staff during the year :—

MR. S. D. ACHAR.

"A brief note on some investigational experiments with Goat Adapted Virus" (Read at the Sixth Annual Session of the Mysore Veterinary Medical Association of 1934).

MR. P. U. NAYAR.

"Anti-genic value of spleen vaccine against Rinderpest." (Read at the Sixth Annual Session of the Mysore Veterinary Medical Association 1934).

MESSRS. S. D. ACHAR AND G. N. SRIKANTIAH.

A note on Babesia motasi Wenyon (1926) in sheep in Mysore. (Indian Veterinary Journal, Volume 9, No. IV).

MR. G. N. SRIKANTIAH.

"A note on Fowl Cholera and the anti-genic value of the Vaccine" (Read at the Sixth Annual Session of the Mysore Veterinary Medical Association, 1934).

*Education.*—During the year under report, Mr. V. S. Kuppuswamy Mudaliar, Veterinary Inspector of this Institute, underwent a post-graduate course in the Imperial Institute of Veterinary Research, Muktesar.

As regards the "Short Course" training given in this Institute to Veterinary Graduates, it is seen from the applications received that a large number of graduates are anxious to undergo training. However, the admission was restricted to one at a time and only the following candidates were selected for the training during the year :—

1. Mr. A. H. Pothnis, L.V.P., (from Mysore).
2. ,, C. E. Lewis, G.B.V.C., (from Ceylon).
3. ,, M. Poornabodha Rao, G.M.V.C. (from Madras).
4. ,, S. R. Nadgir, L. V. P. (from Mysore).

Mr. Satyanaraya Singh, M.SC., from Hyderabad, a scholar in Aligarh University, worked in the Institute for a period of about a month in connection with collection and identification of nematodes in local canameleons and other reptiles.

*Visitors.*—It may not be out of place to mention here that on account of the importance and usefulness of the Institute, as a place of Scientific and general interest, it has been attracting several distinguished visitors, both official and non-official, from within as well as from outside the State. The following were some of the visitors during the year under report.

The Institute was visited by Maharaja Sir Kishen Prasad, Prime Minister of Hyderabad, together with his Suite on 29th May 1934. They were all shown round the different sections of the Institute when they evinced great interest in the working of the Institute.

During the year under report, *Amin-ul-Mulk* Sir Mirza Muhammad Ismail Kt. C.I.E., O.B.E., Dewan of Mysore, was pleased to visit this Institute and to go round all the sections. He suggested several improvements which are being carried out.

*Rajamanthrapravina* S. P. Rajagopalachari, Second Member in Council was also pleased to pay a visit to this Institute on 4th March 1934.

The following were some of the other visitors during the year under report :—

(1) Private Secretary to H. E. H. the Nizam of Hyderabad.
(2) Mr. Hung Chan Chung, M.A., Rockefeller Foundation, Fellow Yen Ching University, Peiking, China.
(3) Mr. Razvi, Hyderabad.
(4) Mr. Humayun Mirza, Personal Assistant to the Dewan of Mysore.
(5) Mr. S. Rangaswamy Iyengar, Administrative General to the Government of Madras.
(6) Mr. Garudachar, G.B.V.C., Lecturer, Bombay Veterinary College.
(7) Mr. M. R. A. Panickar, M.R.C.V.S.
(8) Mr. M. S. Nathan, G.M.V.C., and post-graduate student. } Madras Veterinary College.
(9) Students of the Bio-chemical Department of the Indian Institute of Science, Bangalore.
(10) Students of the Agricultural School, Ramakrishnapur.
(11) Mr. K. S. Krishnaswamy Iyengar, Advocate, Madras.
(12) Mr. S. Gopalaswamy Iyengar, Madras.
(13) *Rao Bahadur* O.Q.O.K.L. Latchmanan Chettiar.
(14) Mr. K. Gopalaswamy Iyengar, Madras.
(15) Mr. S. K. Saminathan Chettiar, Banker, Attangudi, Ramnad District.
(16) ,, K. S. Rajagopala Iyengar, Advocate, Madras.

## XXXII. Acknowledgments.

I take this opportunity to thank all those that co-operated in the work of this Institute during the year under report. However, I wish to make a special mention of some of the officers who have greatly helped in the work of this Institute. I am indeed highly greatful to Lt. A. A. Monteiro, Live Stock Expert in Mysore, for having afforded us all facilities to conduct goat virus experiments on Amritmahal cattle, and also to Mr. K. Krishniengar, Superintendent, Civil Veterinary Department, and his executive staff for having co-operated with us in all occasions in field experiments. My thanks are due to Mr. K. Ranganatha Rao, Assistant Superintendent, Scientific Section, for his ready co-operation and assistance in the laboratory work of this Institute. I am much obliged to Mr. C. Narasinga Raju, Farm Manager, Cattle Breeding Station, for having provided us with all facilities to conduct Blackquarter experiments on the Farm and am equally obliged to the Entomologist in having helped us in identifying ticks. The Mycologist and the Senior Artist of the Agricultural Department are also to be thanked very much in having arranged for taking photographs of the scientific operations in the Institute. My thanks are due to no less extent to the Public Works and Water Works Departments and also to the Agricultural Engineer for their Co-operation in attending to the repairs and alterations of the Institute buildings, etc. I am grateful to the

Economic Botanist also for his ever ready and cordial co-operation in improving the garden on the Institute premises and in raising Farm Crops on the Institute grounds. I wish to thank the Veterinary Inspectors of Dodballapur, Devanhalli, Goribidanur and Gubbi for having tried the Blackquarter Bacterin and reported the results and also the Veterinary Inspector, Mysore for having tried Fowl Cholera Vaccine (our new preparation) in the field and reporting the results. The Veterinary inspectors of Sira, Mysore, Chamarajnagar are also to be thanked for having sent some specimens of muscles from the animals affected with Blackquarter.

I feel I will be failing in my duty if I do not express my deep gratitude to the Director, Imperial Institute of Veterinary Research, Muktesar, and to the Principal, Madras Veterinary College, for having kindly sent certain cultures to this Institute. I heartily thank Mr. M. Ananthanarayana Rao of Madras Veterinary College for his kind help in our publication. The following officers are also to be thanked very much for having kindly arranged to send the annual reports of their Departments in exchange for the report of this Institute.

(1) The Director of Veterinary Services, Tanganyika Territory.
(2) The Chief Veterinary Officer, Colony and Protectorate of Nigeria.
(3) The Director, Imperial Institute of Veterinary Research, Muktesar.
(4) The Director of Agriculture in Mysore.
(5) The Director of Veterinary Research, Veterinary Research Station, Glenfield, New South Wales, Australia.

In concluding the report, I am glad to place on record my deep appreciation of the good work done during the year under report by Mr. P. U. Nayar, Bacteriological Assistant and the whole of the staff, both executive and ministerial, for their loyalty and co-operation in the discharge of their duties during the year although they had often to work overtime in order to cope with the increasingly heavy work in the Institute.

S. D. ACHAR,
*Superintendent,*
*Serum Institute.*

APPENDIX II.—Statement showing the quantity of Rinderpest Goat Virus Produced, issued, and balance remaining monthly for the year 1933-34.

| Month | Balance at the beginning of the month | Quantity produced during the month | Total | Quantity supplied to | | Quantity used in the Institute including wastage, etc. | Total | Stock of Goat Virus on the last day of the month |
|---|---|---|---|---|---|---|---|---|
| | | | | Civil Veterinary Department | Outside the State | | | |
| | C. C. | C. C. | C. C. | C. C. | C. C. | C. C. | C. C. | C. C. |
| July 1933 ... ... ... | 500 | 1,900 | 2,400 | ... | ... | 1,975 | 1,975 | 425 |
| August ,, ... ... ... | 425 | 2,175 | 2,600 | ... | ... | 1,900 | 1,900 | 700 |
| September ,, ... ... ... | 700 | 1,600 | 2,300 | 50 Mysore Dasara Exhibition. | ... | 1,225 | 1,275 | 1,025 |
| October ,, ... ... ... | 1,025 | 1,575 | 2,600 | ... | ... | 1,950 | 1,950 | 650 |
| November ,, ... ... ... | 650 | 1,775 | 2,425 | 25 | ... | 1,525 | 1,550 | 875 |
| December ,, ... ... ... | 875 | 2,868 | 3,743 | 255 | ... | 2,278 | 2,533 | 1,210 |
| January 1934 ... ... ... | 1,210 | 3,360 | 4,570 | 915 | ... | 2,850 | 3,765 | 805 |
| February ,, ... ... ... | 805 | 2,235 | 3,040 | 660 | ... | 1,450 | 2,110 | 930 |
| March ,, ... ... ... | 930 | 2,940 | 3,870 | 630 | ... | 2,760 | 3 390 | 480 |
| April ,, ... ... ... | 480 | 3,060 | 3,540 | 1,290 | ... | 840 | 2,130 | 1,410 |
| May ,, ... ... ... | 1,410 | 3,255 | 4,665 | 465 | ... | 3,780 | 4,245 | 420 |
| June ,, ... ... ... | 420 | 2,985 | 3,405 | 450 | ... | 2,250 | 2,700 | 705 |
| Total ... | 500 | 29,728 | 30,228 | 4,690 50 Mysore Dasara Exhibition. | ... | 24,783 | 29,523 | ... |

S. D. ACHAR,
*Superintendent, Serum Institute.*

## APPENDIX III.—Statement showing the quantity of Anti-Rinderpest Serum produced, supplied, and balance remaining monthly for the year 1933-34.

| Month | Balance at the beginning of the month | Quantity produced during the month | Quantity returned from the Civil Veterinary Department | Total | Quantity supplied to | | Quantity of Serum used in the Institute including wastage, etc. | Total | Stock of Serum on the last day of the month |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Civil Veterinary Department | Outside the State | | | |
| | Doses | Doses | Doses | Doses | Doses | Doses | Doses | Doses | Doses |
| July 1933 ... ... ... | 2,02,000 | 62,770 | 2,450 | 2,67,220 | 91,200 | 4,000 | 70 | 95,270 | 1,71,950 |
| August ,, ... ... ... | 1,71,950 | 26,700 | ... | 1,98,650 | 11,000 | 23,000 | 850 | 34,850 | 1,63,800 |
| September ,, ... ... ... | 1,63,800 | ... | ... | 1,63,800 | 6,000 | 23,000 | ... | 29,000 | 1,34,800 |
| October ,, ... ... ... | 1,34,800 | 40,100 | ... | 1,74,900 | ... | 28,000 | 650 | 28,650 | 1,46,250 |
| November ,, ... ... ... | 1,46,250 | ... | ... | 1,46,250 | 2,000 | 38,000 | 3,000 | 43,000 | 1,03,250 |
| December ,, ... ... ... | 1,03,250 | 1,15,300 | ... | 2,18,550 | 10,000 | 13,000 | 3,230 | 26,230 | 1,92,320 |
| January 1934 ... ... ... | 1,92,320 | ... | ... | 1,92,320 | 8,000 | 23,000 | ... | 31,000 | 1,61,320 |
| February ,, ... ... ... | 1,61,320 | ... | ... | 1,61,320 | 10,000 | 5,000 | ... | 15,000 | 1,46,320 |
| March ,, ... ... ... | 1,46,320 | ... | ... | 1,46,320 | 16,500 | 13,000 | ... | 29,500 | 1,16,820 |
| April ,, ... ... ... | 1,16,820 | ... | ... | 1,16,820 | 16,200 | 10,000 | ... | 26,200 | 90,620 |
| May ,, ... ... ... | 90,620 | ... | ... | 90,620 | ... | 13,000 | 250 | 13,250 | 77,370 |
| June ,, ... ... ... | 77,870 | 85,450 | ... | 1,63,320 | ... | 20,000 | 1[illegible] | 20,000 | 1,43,320 at (5 c.c. a dose.) |
| Total ... | 2,02,000 | 3,30,320 | 2,450 | 5,34,770 | 1,70,900 | 2,13,000 | 8,050 | 3,91,950 | |

## APPENDIX IV.—Statement showing the quantity of Anti-Hæmorrhagic Septicæmia Serum produced, issued, and balance remaining monthly for the year 1933-34.

| Month | Balance at the beginning of the month | Quantity produced during the month | Quantity returned from the Civil Veterinary Department | Total | Quantity supplied to | | Quantity of Serum used in the Institute including wastage, etc. | Total | Stock of Serum on the last day of the month |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Civil Veterinary Department | Outside the State | | | |
| | Doses | Doses | Doses | Doses | Doses | Doses | Doses | Doses | Doses |
| July 1933 ... ... ... | 8,543 | 2,508 | 680 | 11,731 | 1,540 | 7,500 | 471 | 9,511 | 2,220 |
| August ,, ... ... ... | 2,220 | 8,483½ | ... | 10,703½ | 4,100 | 2,500 | 283½ | 6,883½ | 3,820 |
| September ,, ... ... ... | 3,820 | 18,520 | ... | 22,340 | 6,700 | 14,400 | ... | 21,100 | 1,240 |
| October ,, ... ... ... | 1,240 | 13,440 | ... | 14,680 | 3,420 | 40 | 200 | 3,660 | 11,020 |
| November ,, ... ... ... | 11,020 | 3,920 | ... | 14,940 | 2,520 | 5,000 | ... | 7,520 | 7,420 |
| December ,, ... ... ... | 7,420 | 4,120 | ... | 11,540 | 700 | 5,000 | 400 | 6,100 | 5,440 |
| January 1934 ... ... ... | 5,440 | 11,200 | ... | 16,640 | 940 | ... | 80 | 1,020 | 15,620 |
| February ,, ... ... ... | 15,620 | 15,860 | ... | 31,480 | 1,500 | 2,000 | ... | 3,500 | 27,980 |
| March ,, ... ... ... | 27,980 | 10,040 | ... | 38,020 | 1,000 | ... | 20 | 1,020 | 37,000 |
| April ,, ... ... ... | 37,000 | 13,080 | ... | 50,080 | 1,200 | 2,000 | ... | 3,200 | 46,880 |
| May ,, ... ... ... | 46,880 | 5,520 | ... | 52,400 | 1,500 | 3,000 | ... | 4,500 | 47,900 |
| June ,, ... ... ... | 47,900 | ... | ... | 47,900 | 1,460 | ... | ... | 1,460 | 46,440 (15 c.c. a dose) |
| Total ... | 8,543 | 1,06,891½ | 680 | 1,16,914½ | 26,580 | 41,440 | 1,454½ | 69,474½ | |

S. D. ACHAR,
*Superintendent, Serum Institute.*

APPENDIX V.—Statement showing the quantity of Anti-Black-Quarter Serum produced, issued, and balance remaining monthly for the year 1933-34.

| Month | Balance at the beginning of the month | Quantity produced during the month | Quantity returned from the Civil Veterinary Department | Total | Quantity supplied to | | Quantity of Serum used in the Institute including wastage, etc. | Total | Stock on hand on the last day of the month |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Civil Veterinary Department | Outside the State | | | |
| | Doses | Doses | Doses | Doses | Doses | Doses | Doses | Doses | Doses |
| July 1933 | 7,418½ | ... | 2,418 | 9,836½ | 4,520 | 5,000 | ... | 9,820 | 16½ |
| August " | 16½ | 4,614 | 120 | 4,750½ | 440 | ... | 14 | 454 | 4,296½ |
| September " | 4,296½ | 18,200 | ... | 22,496½ | 8,300 | 7,000 | 100* | 10,400 | 12,096½ |
| October " | 12,096½ | 11,740 | ... | 23,836½ | 2,260 | 60 | ... | 2,320 | 21,516½ |
| November " | 21,516½ | 31,400 | ... | 52,916½ | ... | ... | ... | ... | 52,916½ |
| December " | 52,916½ | ... | ... | 52,916½ | 360 | 1,500 | ... | 1,860 | 51,056½ |
| January 1934 | 51,056½ | ... | ... | 51,056½ | 60 | ... | ... | 80 | 50,976½ |
| February " | 50,976½ | ... | ... | 50,976½ | 820 | 3,000 | ... | 3,820 | 47,156½ |
| March " | 47,156½ | ... | ... | 47,156½ | 500 | ... | ... | 500 | 46,656½ |
| April " | 46,656½ | ... | ... | 46,656½ | 1,120 | 2,200 | 16½ | 3,336½ | 43,320 |
| May " | 43,320 | ... | ... | 43,320 | 760 | 2,000 | ... | 2,760 | 40,560 |
| June " | 40,560 | ... | ... | 40,560 | 1,700 | 500 | ... | 2,200 | 38,360 (15 c.c. a dose.) |
| Total ... | 7,418½ | 65,954 | 2,538 | 75,910½ | 16,160 | 21,260 | 130½ | 37,550½ | |

* Used at Ajjampur by the Veterinary Officer of the Institute.

APPENDIX VI.—Statement showing the quantity of Anti-Anthrax Serum produced, issued, and balance remaining monthly for the year 1933-34.

| Month | Balance at the beginning of the month | Quantity produced during the month | Total | Quantity supplied to | | Quantity of Serum used in the Institute including wastage, etc. | Total | Stock of Serum on the last day of the month |
|---|---|---|---|---|---|---|---|---|
| | | | | Civil Veterinary Department | Outside the State | | | |
| | Doses | Doses | Doses | Doses | Doses | Doses | Doses | Doses |
| July 1933 | 17,502 | 3,700 | 21,202 | ... | 1,120 | ... | 1,120 | 20,082 |
| August " | 20,082 | ... | 20,082 | ... | 80 | ... | 80 | 20,002 |
| September " | 20,002 | 4,140 | 24,142 | ... | ... | ... | ... | 24,142 |
| October " | 24,142 | ... | 24,142 | ... | ... | ... | ... | 24,142 |
| November " | 24,142 | 22,960 | 47,102 | ... | 1,000 | ... | 1,000 | 46,102 |
| December " | 46,102 | ... | 46,102 | ... | ... | 20 | 20 | 46,082 |
| January 1934 | 46,082 | ... | 46,082 | ... | ... | ... | ... | 46,082 |
| February " | 46,082 | ... | 46,082 | ... | ... | ... | ... | 46,082 |
| March " | 46,082 | ... | 46,082 | ... | ... | ... | ... | 46,082 |
| April " | 46,082 | ... | 46,082 | ... | ... | ... | ... | 46,082 |
| May " | 46,082 | ... | 46,082 | ... | ... | 20 | 20 | 46,062 |
| June " | 46,062 | ... | 46,062 | ... | ... | ... | ... | 46,062 (15 c.c. a dose.) |
| Total ... | 17,502 | 30,800 | 48,302 | ... | 2,200 | 40 | 2,240 | |

S. D. ACHAR,
*Superintendent, Serum Institute.*

APPENDIX VII.—Statement showing the quantity of Hæmorrhagic Septicæmia Vaccine prepared, issued, and balance remaining monthly for the year 1933-34.

| Month | Balance at the beginning of the month | Quantity produced during the month | Quantity returned from the Civil Veterinary Department | Total | Quantity supplied to | | Quantity of Vaccine used in the Institute including wastage, etc. | Total | Stock of Vaccine on the last day of the month |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Civil Veterinary Department | Outside the State | | | |
| July 1933 | Doses 2,500 | Doses 8,250 | Doses 600 | Doses 11,350 | Doses 4,950 | Doses 1,500 | Doses .. | Doses 6,450 | Doses 4,900 |
| August ,, | 4,900 | 4,350 | ... | 9,250 | 4,300 | 4,500 | ... | 8,800 | 450 |
| September ,, | 450 | 19,450 | ... | 19,900 | 14,950 | 4,000 | 300 | 19,250 | 650 |
| October ,, | 650 | 10,800 | ... | 11,450 | 4,100 | 1,000 | ... | 5,100 | 6,350 |
| November ,, | 6,350 | 8,200 | ... | 14,550 | 3,450 | ... | ... | 3,450 | 11,100 |
| December ,, | 11,100 | ... | ... | 11,100 | 900 | 500 | ... | 1,400 | 9,700 |
| January 1934 | 9,700 | ... | ... | 9,700 | 1,800 | 1,000 | ... | 2,800 | 6,900 |
| February ,, | 6,900 | 1,200 | ... | 8,100 | 3,500 | 2,000 | ... | 5,500 | 2,600 |
| March ,, | 2,600 | ... | ... | 2,600 | 800 | ... | ... | 800 | 1,800 |
| April ,, | 1,800 | 11,550 | ... | 13,350 | 350 | 2,000 | ... | 2,350 | 11,000 |
| May ,, | 11,000 | ... | ... | 11,000 | 1,250 | 2,000 | ... | 3,250 | 7,750 |
| June ,, | 7,750 | ... | ... | 7,750 | 900 | 2,000 | ... | 2,900 | 4,850 (5 c.c. a dose) |
| Total ... | 2,500 | 63,800 | 600 | 66,900 | 41,250 | 20,500 | 300 | 62,050 | ... |

APPENDIX VIII.—Statement showing the quantity of Black-Quarter Filtrate prepared, issued and balance remaining monthly for the year 1933-34

| Month | Balance at the beginning of the month | Quantity produced during the month | Quantity returned from the Civil Veterinary Department | Total | Quantity supplied to | | Quantity of filtrate used in the Institute including wastage, etc. | Total | Stock of filtrate on the last day of the month |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Civil Veterinary Department | Outside the State | | | |
| July 1933 | Doses 400 | Doses 43,750 | Doses 2,150 | Doses 46,300 | Doses 36,800 | Doses 3,500 | Doses 550 *a* | Doses 40,900 | Doses 5,400 |
| August ,, | 5,400 | 18,050 | ... | 23,450 | 12,400 | 6,000 | 100 *b* | 18,500 | 4,950 |
| September ,, | 4,950 | 22,400 | ... | 27,350 | 19,800 | 2,000 | 750 *c* | 22,550 | 4,800 |
| October ,, | 4,800 | 21,400 | ... | 26,200 | 15,800 | 1,600 | ... | 16,900 | 9,300 |
| November ,, | 9,300 | 4,950 | ... | 14,250 | 5,400 | ... | ... | 5,400 | 8,850 |
| December ,, | 8,850 | 9,750 | ... | 18,600 | 2,250 | 1,000 | ... | 3,250 | 15,350 |
| January 1934 | 15,350 | ... | ... | 15,350 | 4,650 | ... | ... | 4,650 | 10,700 |
| February ,, | 10,700 | ... | ... | 10,700 | 3,700 | 1,000 | 550 *d* | 5,250 | 5,450 |
| March ,, | 5,450 | 7,800 | ... | 13,250 | 6,350 | ... | ... | 6,350 | 6,900 |
| April ,, | 6,900 | 5,950 | ... | 12,850 | 4,850 | 1,200 | ... | 6,050 | 6,800 |
| May ,, | 6,800 | 6,300 | ... | 13,100 | 9,650 | 1,000 | ... | 10,650 | 2,450 |
| June ,, | 2,450 | 16,600 | ... | 19,050 | 16,250 | 500 | ... | 6,750 | 2,300 (5 c.c. a dose) |
| Total ... | 400 | 1,56,950 | 2,150 | 1,59,500 | 1,37,400 | 17,800 | 2,000 | 1,57,200 | ... |

(*a*) For inoculating the animals at lancers by the Veterinary Inspector of the Institute.
(*b*) Do do do
(*c*) Used at Ajjampur by the Veterinary Officers of the Institute.
(*d*) Do do

S. D. ACHAR,
*Superintendent, Serum Institute.*

APPENDIX IX.—Statement showing the quantity of Bacterin prepared, issued and balance remaining monthly during the year 1933-34.

| Month | Balance at the beginning of the month | Quantity produced during the month | Total | Quantity supplied to | | Quantity of Serum used in the Institute | Total | Stock of Bacterin on the last day of the month |
|---|---|---|---|---|---|---|---|---|
| | | | | Civil Veterinary Department | Outside the State | | | |
| | Doses. | Doses. | Doses. | Doses. | Doses. | Doses. | Doses. | Doses. |
| July 1933 | ... | ... | ... | ... | ... | ... | ... | ... |
| August ,, | ... | ... | ... | ... | ... | ... | ... | ... |
| September ,, | ... | 550 | 550 | 200 | ... | ... | 200 | 350 |
| October ,, | 350 | 3,450 | 3,800 | ... | ... | ... | ... | 3,800 |
| November ,, | 3,800 | ... | 3,800 | 200 | ... | ... | 200 | 3,600 |
| December ,, | 3,600 | ... | 3,600 | ... | ... | ... | ... | 3,600 |
| January 1934 | 3,600 | ... | 3,600 | ... | ... | ... | ... | 3,600 |
| February ,, | 3,600 | ... | 3,600 | ... | ... | ... | ... | 3,600 |
| March ,, | 3,600 | 1,200 | 4,800 | ... | ... | ... | ... | 4,800 |
| April ,, | 4,800 | ... | 4,800 | 400 | ... | ... | 400 | 4,400 |
| May ,, | 4,400 | ... | 4,400 | 400 | ... | ... | 400 | 4,000 |
| June ,, | 4,000 | ... | 4,000 | ... | ... | ... | ... | 4,000 at 5 c. c. a dose. |
| Total | ... | 5,200 | 5,200 | 1,200 | ... | ... | 1,200 | ... |

S. D. ACHAR,
*Superintendent, Serum Institute.*

APPENDIX X.—Statement showing the quantity of Sheep-pox Vaccine prepared, issued, and balance remaining monthly for the year 1933-34.

| Month | Balance at the beginning of the month | Quantity produced during the month | Total | Quantity supplied to | | Quantity of Vaccine used in the Institute including wastage etc. | Total | Stock of Vaccine on the last day of the month |
|---|---|---|---|---|---|---|---|---|
| | | | | Civil Veterinary Department | Outside the State | | | |
| | c. c. | c. c. | c. c. | c. c. | c. c. | c. c. | c. c. | c. c. |
| July 1933 .. .. .. | 15·795 Concentrated | .. | 15·795 Concentrated | 6 Concentrated | .. | .. | 6 Concentrated | 9·795 Concentrated |
| August ,, .. .. .. | 9·795 conc. | 40·00 | 49·795 conc. | 2 conc. | .. | .. | 2 conc. | 47·795 conc. |
| September ,, .. .. .. | 47·795 conc. | .. | 47·795 conc. | .. | .. | .. | .. | 47·795 conc. |
| October ,, .. .. .. | 47·795 conc. | .. | 47·795 conc. | 2 conc | .. | 0·25 Concentrated | 2·250 conc. | 45·545 conc. |
| November ,, .. .. .. | 45·545 conc. | .. | 45·545 conc. | .. | .. | .. | .. | 45·545 conc. |
| December ,, .. .. .. | 45·545 conc. | .. | 45·545 conc. | 15 conc. | .. | .. | 15·000 conc. | 30·545 conc. |
| January 1934 .. .. .. | 30·545 conc. | .. | 30·545 conc | ... | .. | .. | .. | 30·545 conc. |
| February ,, .. .. .. | 30·545 conc. | .. | 30·545 conc. | 10·000 conc. | .. | 0·250 conc. | 10·250 conc. | 20·295 conc. |
| March ,, .. .. .. | 20·295 conc. | .. | 20·295 conc. | 11·00 conc. | .. | 0·250 conc. | 11·250 conc. | 9·045 conc. |
| April ,, .. .. .. | 9·045 conc. | .. | 9·045 conc. | 6 conc. | .. | .. | 6·00 conc. | 3·045 conc. |
| May ,, .. .. .. | 3·045 conc. | 20·000 conc. | 23·045 conc. | 15·500 conc. | .. | 1·545 conc. | 17·045 conc. | 6·000 conc. |
| June ,, .. .. .. | 6·000 conc. | 32·000 conc. | 38·000 conc. | .. | .. | .. .. | .. | 38·000 conc. |
| Total .. | 15·795 Concentrated | 92·000 Concentrated | 107·795 Concentrated | 67·500 Concentrated | .. | 2·295 Concentrated | 69·795 Concentrated | |

S. D. ACHAR,
*Superintendent, Serum Institute.*

## APPENDIX XI.—Statement showing the quantities of Sera and other products, supplied and balance remaining during the year 1933-34.

| Name of products | Opening balance | Quantity produced | Quantity returned | Total | Quantity supplied to | | Quantity used in the Institute including wastage, etc. | Total | Stock on hand on 1st July 1934 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Civil Veterinary Department | Outside the State | | | |
| 1. Anti-Rinderpest Serum ... ... | Doses. 2,02,000 | Doses. 3,30,920 | Doses. 2,450 | Doses. 5,34,770 | Doses. 1,70,900 | Doses. 2,13,000 | Doses. 8,050 | Doses. 3,91,950 | Doses. 1,42,820 |
| 2. Anti-Hæmorrhagic Septicæmia Serum ... | 8,543 | 1,06,691⅓ | 680 | 1,15,914⅓ | 26,580 | 41,440 | 1,454⅓ | 69,474⅓ | 46,440 |
| 3. Anti-Black-quarter Serum ... ... | 7,418⅔ | 65,954 | 2,538 | 75,910⅔ | 16,160 | 21,260 | 130⅔ | 37,550⅔ | 38,360 |
| 4. Anti-Anthrax Serum ... ... | 17,502 | 30,800 | ..... | 48,302 | ..... | 2,200 | 40 | 2,240 | 46,062 |
| 5. Hæmorrhagic Septicæmia Vaccine ... | 2,500 | 63,800 | 600 | 66,900 | 41,250 | 20,500 | 300 | 62,050 | 4,850 |
| 6. Black-quarter Filtrate ... ... | 400 | 1,56,950 | 2,150 | 1,59,500 | 1,37,400 | 17,800 | 2,000 | 1,57,200 | 2,300 |
| 7. Black-quarter Bacterin ... ... | ..... | 5,200 | ..... | 5,200 | 1,200 | ..... | ..... | 1,200 | 4,000 |
| 8. Sheep-pox Vaccine ... ... | 15,795c.c. Conc. | 92,000 c.c. Conc. | ..... | 1,07,795 c.c. Conc. | 67·500 c.c. Conc. | ..... | 2·295 Conc. | 69·795 c.c. Conc. | 38·000 c.c. Conc. |
| 9. Rinderpest Virus (Bull virus) ... ... | 201 ozs. or 5025 c.c. | 11,747 ozs. or 2,93,675 c.c. | ..... | 11,948 ozs. or 2,98,700 c.c. | 3,940+7 ozs. or 98,675 c.c. | 313 ozs or 7,825 c.c. | 7,646 ozs. or 1,91,150 c.c. | 11,906 ozs. or 2,97,650 c.c. | 42 ozs. or 1,050 c.c. |
| 10. Rinderpest Virus (Goat virus) ... ... | 500 c.c. | 29,728 c.c. | ..... | 30,228 c.c. | 4,690 c.c. +50 c.c. (For Mysore Dasara Exhibition.) | ..... | 24,783 | 29,523 | 705 c.c. |

## APPENDIX XII.—Statement showing the products supplied to the different Provinces, States, etc., during the year 1933-34.

| Products | Mysore | Hyderabad | Coorg | Baroda | Kolhapur | Sangli | Ichalkaranji | Trichur | Pudukottai | Rishi valley | Janjira | Lancers | Used at Ajjampur | Used at Institute including wastage etc., | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Doses | Doses | Doses | Doses | Doses | Doses | Doses | Doses | Doses | Doses | Doses | Doses | Doses | Doses | Doses |
| Anti-Rinderpest Serum ... | 1,70,900 | 1,84,000 | 27,000 | 2,000 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 8,050 | 3,91,950 |
| Anti-Hæmorrhagic Septicæmia Serum. ... | 26,580 | 38,000 | ... | ... | 2,000 | 500 | 40 | 900 | ... | ... | ... | ... | ... | 1,454⅓ | 69,474⅓ |
| Anti-Blackquarter Serum ... | 16,160 | 20,500 | ... | ... | ... | ... | ... | ... | 700 | 60 | ... | ... | 100 | 30⅔ | 37,550⅔ |
| Anti-Anthrax Serum ... | ... | 2,000 | ... | ... | ... | ... | ... | 140 | ... | ... | 60 | ... | ... | 40 | 2,240 |
| Hæmorrhagic Septicæmia Vaccine. | 41,250 | 16,000 | ... | 4,500 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 300 | 62,050 |
| Black-quarter Filtrate ... | 1,37,400 | 17,000 | ... | ... | ... | ... | ... | ... | 700 | 100 | ... | 50 | 1,300 | 650 | 1,57,200 |
| Black-quarter Bacterin ... | 1,200 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ..... | 1,200 |
| Sheep-pox Vaccine ... | 67·500 c.c. (Conc.) | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2·295c.c. (Concentrated) | 69·795c.c. (Concentrated) |
| Rinderpest Bovine Virus ... | (a) 98,675 c.c. | ... | 7,875 c.c. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 18,450 c.c. 1,77,700 c.c. (discarded) | 2,97,650 c.c. |
| Rinderpest Goat Virus ... | 4,690 c.c. plus 50 c.c. Dasara Exhibition. | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 335 c.c. 24,448 c.c. (discarded) | 29,523 c.c. |

(a) Including 125 c.c. used for Goat virus immunity test at Bihar.
,, 50 c.c. taken for Mysore Dasara Exhibition.

APPENDIX XIII.—Statement showing the financial results of the working of the Serum Institute during the year 1933-34.

| Receipts | | | Expenditure | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sale of sera, vaccines and other products including those applied to the Civil Veterinary Department | Sale of animals, manure, etc. | Total | Purchase of animals | Feeding charges | Apparatus, chemicals and glassware | Contingencies | Salaries and travelling allowance of officers and staff | Total |
| Rs. a. p. | Rs. a. p. | Rs. | Rs. a. p. | Rs. a. p. | Rs. a. p. | Rs. a. p. | Rs. a. p. | Rs. a. p. |
| 1,23,705 2 0 | 3,593 14 0 | 1,27,299 | 12,556 0 0 | 11,498 4 0 | 11,940 0 0 | 7,309 14 2 | 40,102 15 0 | 83,407 1 2 |

APPENDIX XIV.—Table showing the results of smears examined during the year 1933-34.

| Disease suspected | Number of smears | | | Total |
|---|---|---|---|---|
| | Positive | Doubtful | Negative | |
| Anthrax ... ... | 64 | ... | 4 | 68 |
| Black-quarter ... ... | 91 | ... | 29 | 120 |
| Hæmorrhagic Septicæmia ... ... | 250 | 15 | 15 | 280 |
| Past aviseptieus ... ... | 67 | 14 | 21 | 102 |
| Babesia Bigenium ... ... | 45 | 1 | ... | 46 |
| Theiloria mutans ... ... | 553 | ... | 759 | 1,317 |
| N. Equi ... ... | 1 | ... | ... | 1 |
| Babesia motasi ... ... | 67 | 1 | ... | 68 |
| Johne's Disease ... ... | ... | ... | 1 | 1 |
| Post mortem smears .. ... for B. Nearogen grap ... ... | 561 | ... | 498 | 1,059 |
| Total ... | ... | ... | ... | 3,062 |

APPENDIX XV.—List of products issued from the Mysore Serum Institute, Bangalore, and the current prices as sanctioned by the Government of Mysore.

| Name of product | Total contents of bottle | Unit dose | *Cost per unit dose |
|---|---|---|---|
| | | | Rs. a. p. |
| Anti-Rinderpest Serum, Quality I. | 250 cc. in each standard bottle (or 50 doses.) | 5 cc. | 0 2 0 |
| Anti-Rinderpest Serum, Quality II. | Do do ... | 5 cc. | 0 1 6 |
| Anti-Black quarter Serum .. | 300 cc. (or 20 doses) .. | 15 cc. | 0 4 0 |
| Anti-Hæmorrhagic Septicæmia Serum. | Do do ... | 15 cc | 0 4 0 |
| Anti-Anthrax Serum ... | Do do ... | 15 cc. | 0 4 0 |
| Hæmorrhagic Septicæmia Vaccine. | 250 cc. (50 doses) ... | 5 cc. | 0 2 0 |
| Black-quarter Filtrate ... | Do do ... | 5 cc. | 0 3 6 |
| Black-quarter Bacterin (supplied in 1 oz. and 2 oz. bottles). | Do do ... | 5 cc. | 0 3 6 |
| Rinderpest Virus ... | 25 cc. (or 25 doses) ... | 1 cc. | 0 1 0 |
| Sheep-pox Vaccine (supplied in ampoules). | 100 doses in one ampoule ... | 100 doses | 0 6 0 |
| Rinderpest Goat Virus (supplied in 1 oz. and 2 oz. bottles). | ..... | 15 cc. | 3 8 0 |

* These rates are for delivery at the Institute premises and are inclusive of the cost of packing, cases, and botties, etc.,
N.B.—The minimum quantity of each product that can be supplied at a time is one standard bottle as noted in column 2.

S. D. ACHAR,
*Superintendent, Serum Institute.*

WD 1091—GPB—250—29-8-35.

D.O. No.175/1 file
No.483

PRIVATE SECRETARY MYSORE

THE PALACE,
BANGALORE.

11th March 1935.

My dear Sir Mirza Ismail,

I am directed to return herewith the Secretariat file No.483, dated the 9th instant and to say that it has been perused by His Highness.

Yours sincerely,

Amin-ul-Mulk
Sir Mirza M. Ismail, Kt., C.I.E., O.B.E.,
Dewan of Mysore, Bangalore.